COTTON

Volume LXXXI
Number Seven
Ten Cents a Copy

MAY, 1917

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Dalton, and Atlanta, Ga.

Dutcher Temples

Trade-Mark Reg. U. S. Pat. Off.

DRAPER CORPORATION

SOLE MANUFACTURERS

HOPEDALE MASSACHUSETTS

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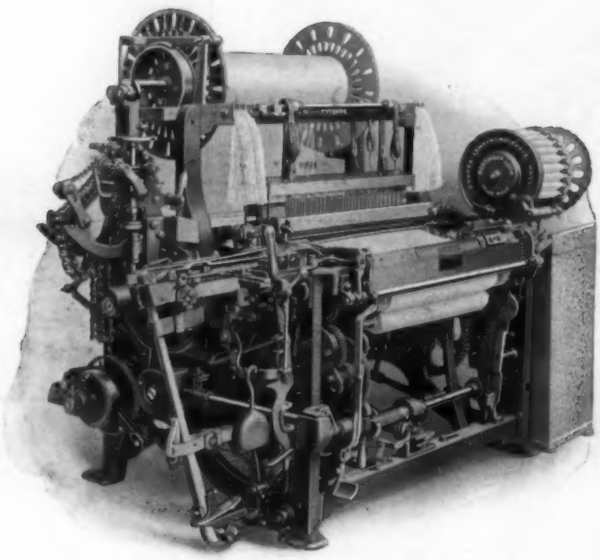

NORTHROP LOOMS

TRADE-MARK REGISTERED

The Northrop
Turkish Towel Loom
illustrated above
saves more in proportion
than the Northrop Loom
on plain goods

DRAPER CORPORATION

HOPEDALE MASSACHUSETTS

Southern Office
188 South Forsyth Street Atlanta Georgia

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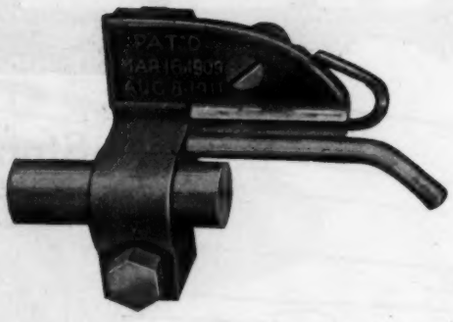

Over 150 000

MacColl Patent Spooler Guides

in use up to
March 1 1917
Adapted to both
Cotton and Worsted Yarns

DRAPER CORPORATION

HOPEDALE MASSACHUSETTS

Southern Office
188 South Forsyth Street Atlanta Georgia

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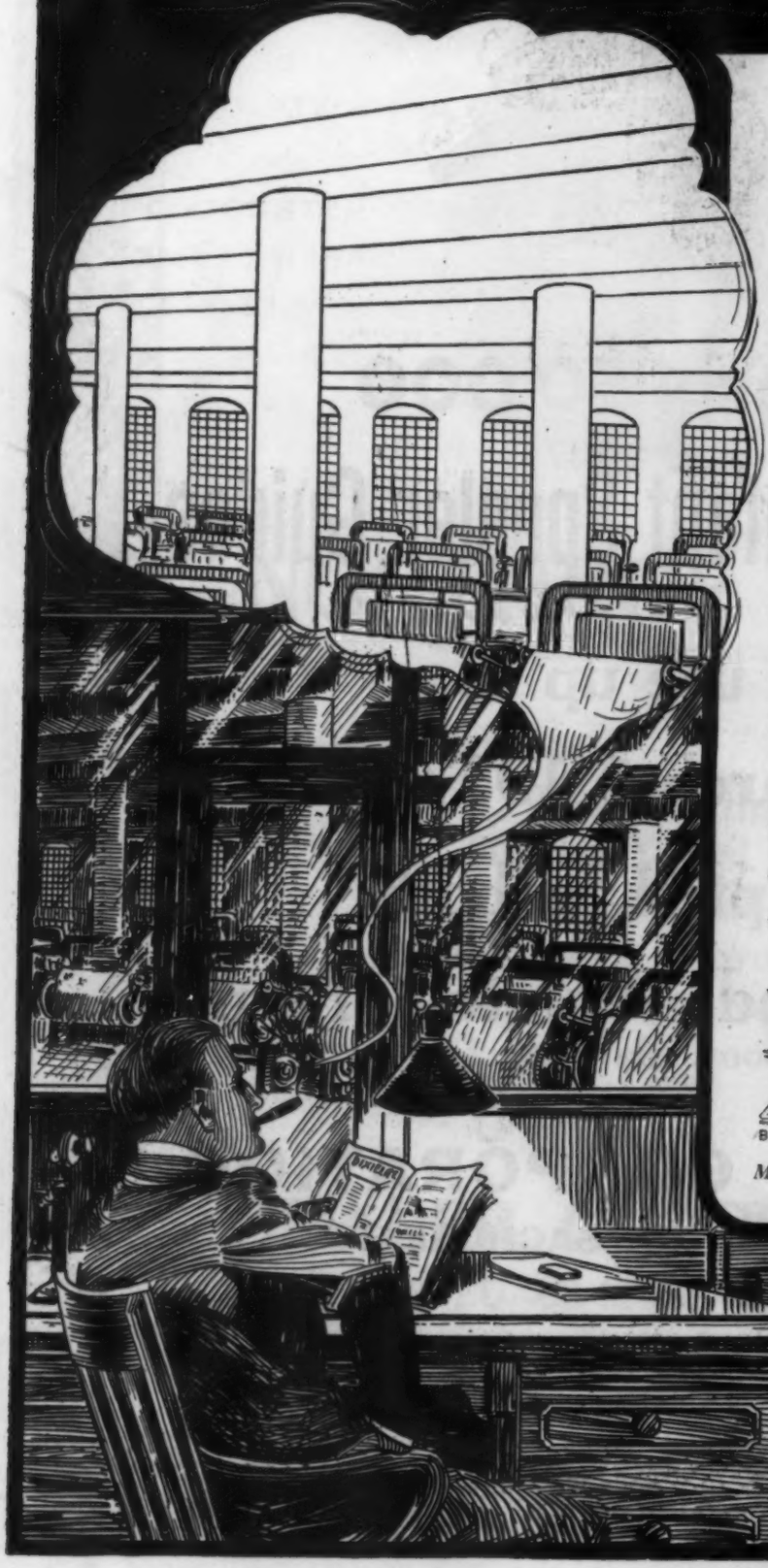
"DIXIELITE"



Stop and Think What "Dixielited" Walls Mean to You

Mill and factory superintendents, wishing to attain full efficiency from their employees, should stop and think what DIXIELITE applied to the walls and ceilings means to you.

In the first place it assures a snowy white surface, not a glary white, but a white that takes all of the light entering your windows, magnifies and diffuses it to every part of the room.

In the second place it means that your walls and ceilings will absolutely stay white which shows a great saving in continual repainting walls to keep them white.

DIXIELITE is not an imitation of anyone's mill white. It is an effective mill white which has behind it 65 years in paint making. You may have to pay a little more for it but it's worth more. It is a semi-gloss white and is washable and sanitary. It is economical in the long run and only one coat is needed over previously coated white walls.

On new woodwork it should be preceded by one coat of DIXIE Flat White.

On cement or brick white use Bay State Brick & Cement Coating as a first coater for DIXIELITE.

A sample of DIXIELITE will be sent free of charge if interested.

Demand DIXIELITE from your paint contractor.

Send for a sample panel today.

Acquaint yourself with this superior mill white. Different from the rest.

BAY STATE

Wadsworth, Howland & Co., Inc.

139-141 Federal Street

BOSTON, - - MASS.

Makers of Bay State Brick and Cement Coating.

SACO-LOWELL SHOPS

TEXTILE MACHINERY

INCLUDING

ROVING FRAMES
OF
IMPROVED DESIGN
AND
CONSTRUCTION
SLUBBER FRAMES
INTERMEDIATES
FINE FRAMES AND
JACK FRAMES

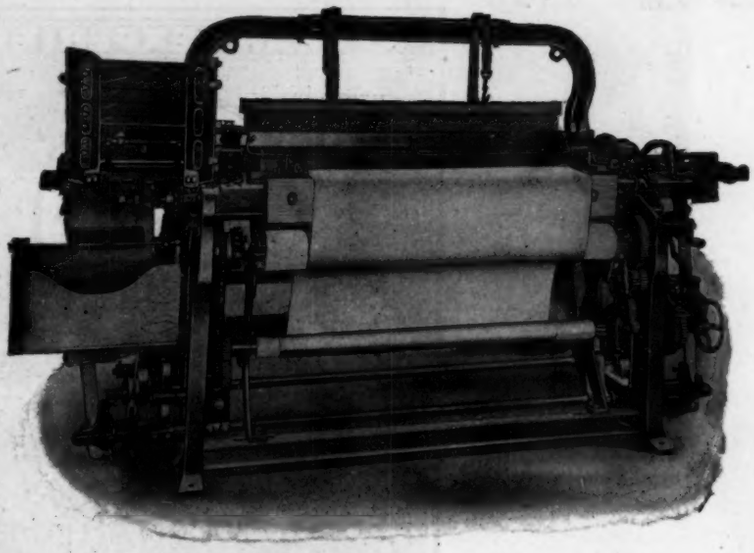
SHOPS

BIDDEFORD, ME. LOWELL, MASS. NEWTON UPPER FALLS, MASS.

EXECUTIVE OFFICES
BOSTON, MASS.

ROGERS W. DAVIS, Southern Agent, CHARLOTTE, N. C.

THE "IDEAL" Automatic Loom stands for low operating cost and high quality of fabrics.



It has the widest scope of any automatic loom and can be easily changed over from one fabric to another.

And remember that while saving 50% to 60% in weaving costs for you the weavers can earn from 40% to 50% more wages.

Write for our illustrated catalog.

The Stafford Company

Readville, Mass.

Fred H. White, Southern Agent, Charlotte, N. C.

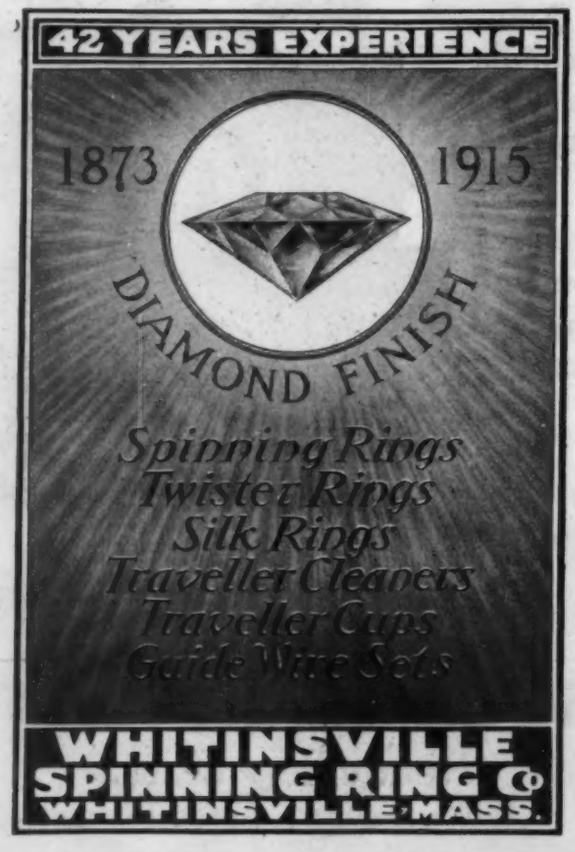
CROMPTON & KNOWLES LOOM WORKS

LOOMS

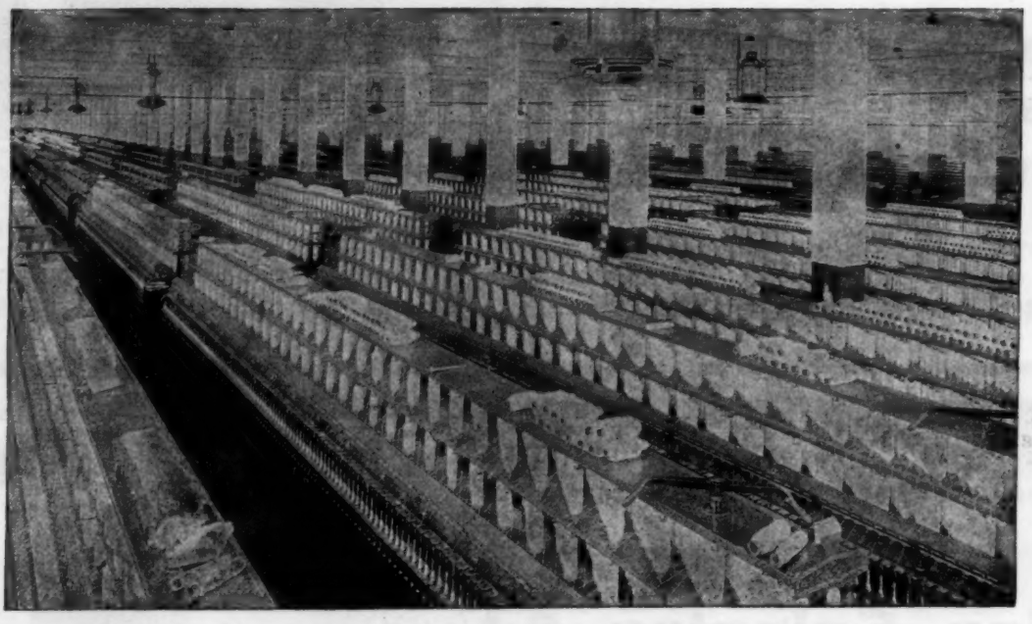
WORCESTER, MASS.

PROVIDENCE, R. I. **PHILADELPHIA, PA.**

Alexander & Garsed, Charlotte, N. C., Southern Representatives.



Cramer System
OF
Air Conditioning



Reinforced Concrete Spinning Room.

Nearly all of the most up-to-date mills choose the "Cramer System." Its adaptability, simplicity, efficiency and automatic control are features copied extensively but nowhere duplicated.

An Equipment for Every Requirement.

Stuart W. Cramer

New York **CHARLOTTE, N. C.** **Boston**

B. S. Roy & Son Co.

Est. 1868

GRINDERS

The only firm in the world exclusively devoted to building and improving grinding machinery for textile mills.

FOR

Woolen and Cotton Cards

Garnets Shears, Nappers and Calender Rolls

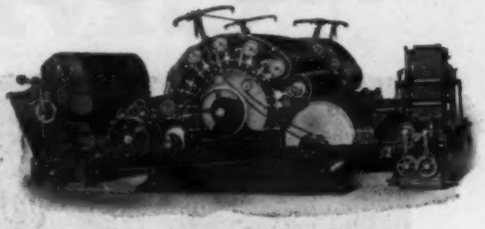
Write for prices on your needs

Worcester, Mass.

Smith & Furbush Machine Company

Philadelphia

Builders of Carding and Spinning Machinery for Cotton Waste Yarns spun on the wool principle, also for wool, asbestos, jute and other fibres.



Two Card Se for Cotton Waste

We also build Cards for all kinds of fibres. Waste Machinery is our specialty. Ask for circulars.

Woolen Cards

Waste Cards

Ring Spinning Frames

System: G. Josephy's Erben

Asbestos and Flax Machinery a Specialty

Write for prices and particulars direct to the manufacturers.

Lehnert Textile Machinery Company

53 State Street

BOSTON, MASS.

The Palmer Adjustable Thread Guide

For Ring Spinning and Twisting Frames

Easily adjusted.

Extreme accuracy and permanence of setting.

Cheapest of them all.

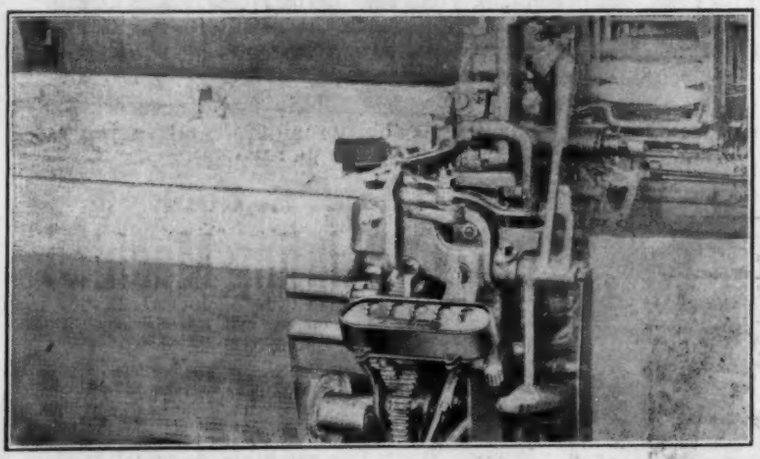
Mail guide-block for free sample.

Patented and manufactured by

THE I. E. PALMER COMPANY

Middletown, - - - Connecticut.

Do You KNOW What Every One of Your Looms Is Doing?



A Root Counter on Crompton & Knowles Loom, connected to "take-up" roll." This counter can also be connected to cam shaft to count picks, if preferred.

Do you KNOW absolutely what every man and machine in your mill is doing? Or is your counting done by hand, or do you guess the count by weighing?

There isn't a mill in the country that couldn't save money by eliminating laborious and inaccurate counting. Knowing is always more economical than guessing.

It doesn't matter whether you want to count the output of a loom, a folding machine, braiding machine or any other textile machinery, you can depend upon

ROOT COUNTERS

"The Production Watchmen"

They put the exact figures before you. They locate leaks. They prevent waste from over-production. They keep tab on labor, time and material, and prevent disputes with employees on piece work. No disputing the count, because it is always accurate. No trucking the product about to be counted. They give the figures at a glance—and when the work is finished it is counted.

There's a Root Counter for every sort of textile machine. Tell us what machine you would like to try out one of them on, and we'll send it to you for a free 30 days trial. No obligation. Ask today for Catalog "C."

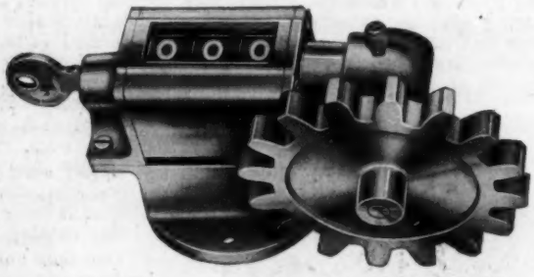
The C. J. Root Company, 50 Johnson St., Bristol, Conn.

Try Them Thirty Days at Our Expense

To prove to you that Veeder Counters will increase your loom production, reduce the cost of weaving per yard, and increase the efficiency of your mill we will send you either of the counters illustrated on 30 days free trial. If the counters illustrated are not suitable to your requirements write us as we make counters for practically every possible purpose where a count is desired.

Loom Pick Counter

Loom Yardage Counter.



Our free textile booklet gives much interesting information. Yours for the asking.

THE VEEDER MANUFACTURING CO.

Speed Counters
Lineal Measuring Counters

6 Sargeant St., HARTFORD, CONN., U. S. A.

MAKERS OF

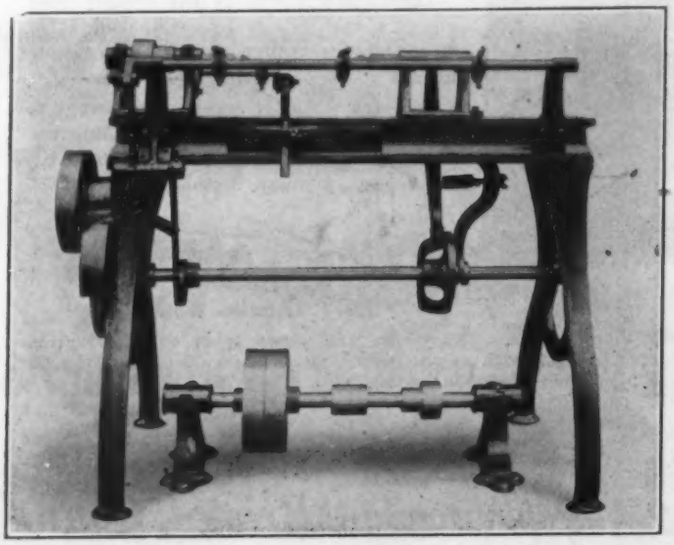
Cyclometers for Bicycles and Motorcycles, Odometers for Automobiles and Horse Drawn Vehicles, Tachometers, Tachodometers, and Fine Die Castings.

Hank Counters
Thread Measuring Counters

A Paying Investment for Any Mill

An occasional coat of paint or shellac on your bobbins and spools is an investment that will pay good returns. These small but important parts are often overlooked, with the result that time and material are wasted and extra motions are required of operatives to keep up ends on rough and splintered bobbins.

But do your own painting. Don't pay out your good money to the bobbin manufacturers for painting or repainting. Many mills are buying their bobbins and spools unpainted, and saving at least 75% by doing their own painting.



The J. E. Lock
Bobbin Painting Machine

is a paying investment for any mill. Any class of bobbins or spools, quills, twisters, triptods, etc., can be painted on this machine at a speed of 30 per minute, all of them painted exactly uniformly and with no waste of paint. The cost of operation and supplies allows a big saving over the prices charged for painting by the bobbin manufacturers. Any boy or girl can operate it.

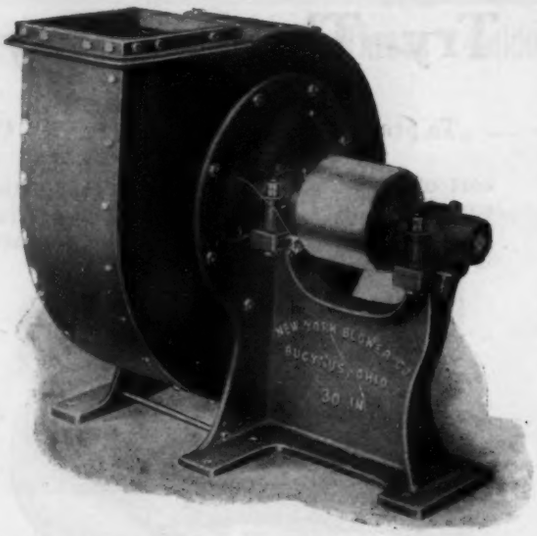
This machine is used by all the big bobbin manufacturers. It pays them, and it will pay you. It is now being used in the largest cotton, woolen and silk mills in the country. More and more mill men are realizing its advantages in their mill.

It will pay you to look into this painting proposition, and full information and prices will be sent gladly. Drop us a line today.

We carry a complete line of Bobbins and Skewers. When in the market let us quote you.

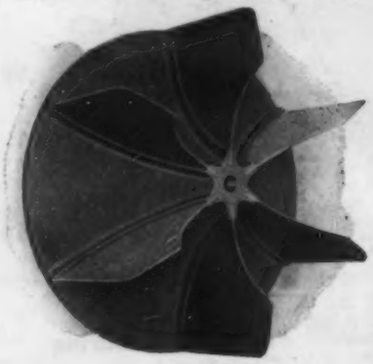
Blandin Company
Lawrence, Mass.

The Fan That Solved The Problem



One of the problems arising around every cotton mill is the suitable handling of the raw material from the opening room to the point where it enters the machinery in the picking department. Many systems have been devised to secure the efficient handling of this material, avoiding at the same time as many of the common difficultes arising with such systems as possible.

The fan that solved the problem is our Reversible Fan. One of the reasons for its success is because of the construction of the fan wheel, which is constructed with a cone-shape back of cast iron, into which the steel blades are cast solidly, thus eliminating all rivets, bolts and screws which are liable to work loose and cause trouble. The wheel is so formed as to offer the least resistance to the material passing through the fan, and on account of this important feature of design proves particularly satisfactory with stringy material such as cotton, shoddy, rags, etc.



Heavy steel plate housings, small details of the fan construction such as high carbon steel shafts and chain oiling bearings—in fact every detail of this reversible fan is fully up to the recognized high standard to be found in all our products.

Our catalog R.F. explains fully. Ask for it today.

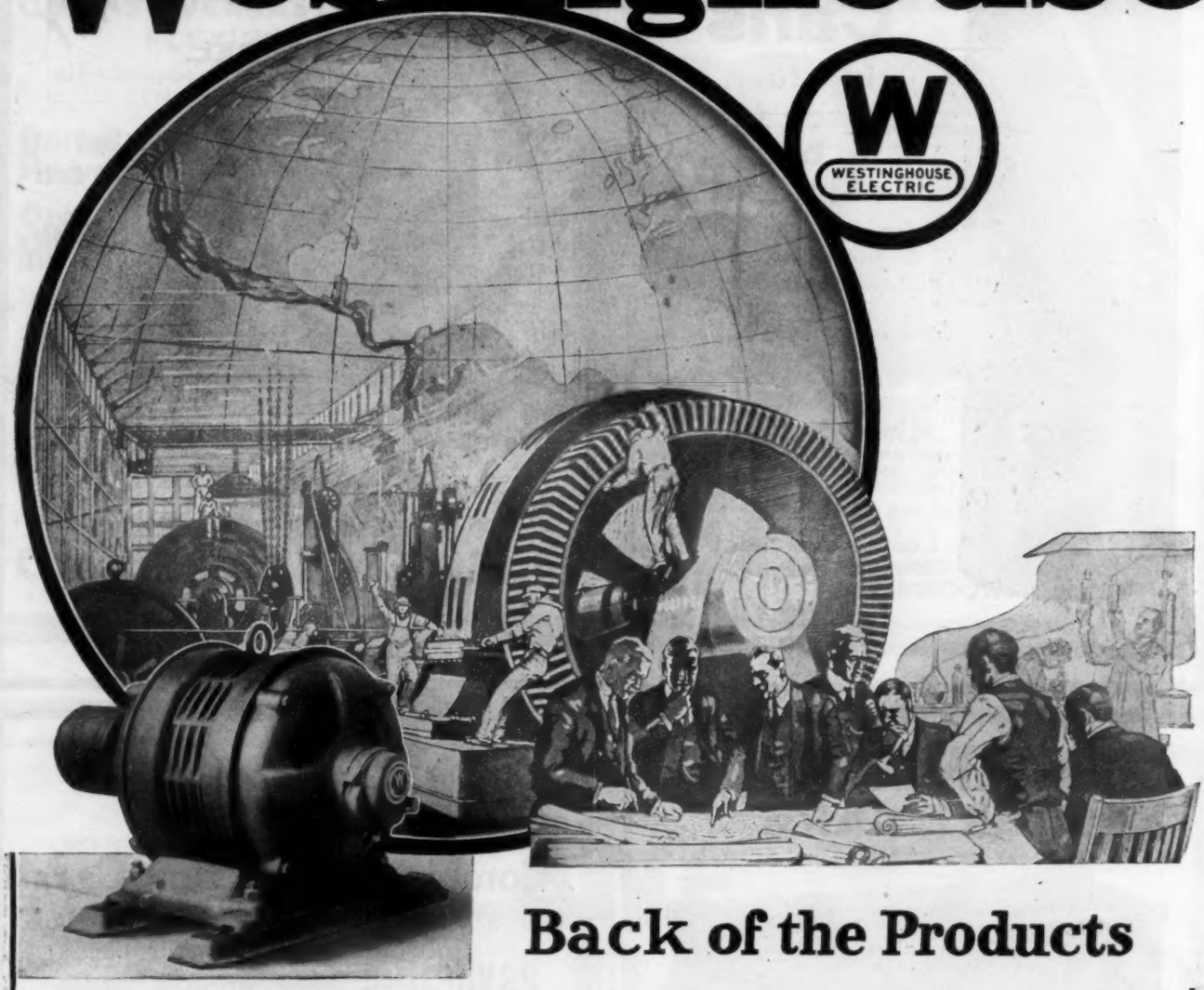
Our fans and air washers have set a standard for cooling, heating and ventilating. Catalogs Nos. 65 and 67 show the complete line. Write for them today.

The New York Blower Co.,
Main Office: Archer Ave., and Canal Street, CHICAGO, ILL.
Works: BUCYRUS, OHIO

508 Erie Bldg. Cleveland, O | Ridge Arcade Bldg. Kansas City, Mo. | 502 Plymouth Bldg. Minneapolis, Minn. | 303 B. F. Jones Bldg. Pittsburgh, Pa.
12 Railroad Place, East Oange, N. J.

BUILT RIGHT RUN RIGHT

Westinghouse



Back of the Products

that bear the name Westinghouse is an organization that is an international institution.

A great institution that stands for quality in its products and progressive thought in solution of electrical and power problems.

Westinghouse engineering and manufacturing resources cover the entire electrical and power field, from the construction of a small meter with the accuracy and precision of a watch to the electrification of a great railway system.

Westinghouse organization has its Textile Power Experts whose years of experience in equipping mills with electrical apparatus can help you in changing a drive, or in equipping a complete new mill.

Put your problem up to Westinghouse.

Westinghouse Electric & Manufacturing Company

East Pittsburgh, Pa.

Atlanta — Boston — Charlotte — New York — Philadelphia

ROVING Cans

In stock ready for at once shipment

"Leatheroid" No. 1 Seamless Roving Cans

Patented "Leatheroid" rolled top, rolled in and under two and one-half times, having no steel rim underneath the roll to break the can. Solid steel bottom, steel chime, 6 in. kicking band. We guarantee this can in every respect.

Made in 10" and 12" diameter x 36" high.

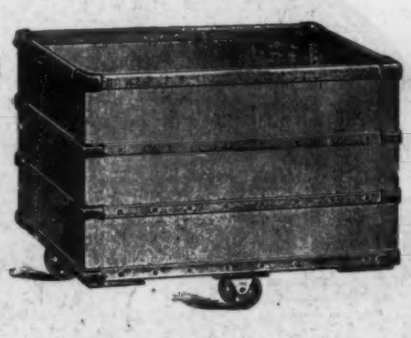
Leatheroid Sales Co.
1024 Filbert St., Philadelphia, Pa.
Selling Agents for the Leatheroid Mfg. Company

Sold by Southern Textile Mill Supply Houses

KEYSTONE FIBRE COMPANY

YORKLYN, DEL.

Roving Cans
Steel Clad Cars
Gill Cans



Mill Boxes
Doffing Cars
Waste Baskets

Strong - Durable - Unexcelled

Southern Agent.

HAROLD C. SMITH, Greenville, S. C.

Write for Descriptive Circular

"STANDARD" FIBRE CARS

Superior Construction Insures Long Life

Made from pure vulcanized fibre. Top moulding of hard wood, either plain or metal covered. Center bands and bottom mouldings of first quality maple. Self-oiling yoke wheels.

Write for catalog of all "Standard" Fibre Products.

STANDARD FIBRE COMPANY
Miller St., Somerville, Mass.

Hercules
TRADE-MARK REGISTERED

Combination Doffing Cars

One stationary and one loose fibre box.
Substantial wood platform.
Self-oiling wheels.
Boxes may be steel clad if desired.

Vulcanized Fibre
Roving Cans, Boxes, Trucks, Barrels, Baskets, etc.
Write for Catalog No. 19.
FIBRE SPECIALTY MFG. CO.
Kennett Square, Pa.

Necessaries for the Mill and Shipping Department

CARY'S EVERLASTING FLEXIBLE STEEL MAT

Has a Scraping Surface in Every Direction.
Practically Indestructible.

Rust-Proof Reinforced Edges

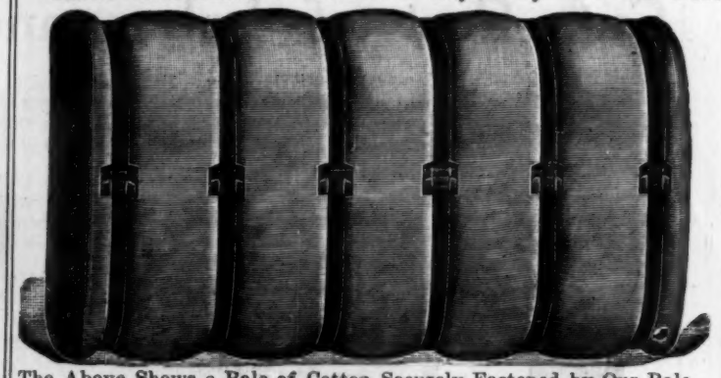
Sanitary Self-Cleaning

The U. S. Government has contracted for this Mat to be used in all its buildngs throughout the U. S.

Twelve Regular Stock Sizes. Special Sizes to Order.

CARY'S BALE BAND AND BUCKLE

Those Who Have Tried Them Say They Are the Best



The Above Shows a Bale of Cotton Securely Fastened by Our Bale Ties and Buckles. Note Its Neat and Compact Appearance.

The Buckle can be applied with the Locking or Hook part next to the Bale so that there is no possibility of its getting caught in other Bales when piled together.

Also Manufacturers of
Twisted and Flat Wire Box Straps and a Full Line of Shippers' Specialties.

Cary Manufacturing Company, Manhattan Bridge Plaza BROOKLYN, N. Y.

Our new Self-Tightening Twisted Wire Strap. **Nails can be driven anywhere**

FIG 50

Lane Doffing Trucks are made to wear. Heavy Duck and Spring-steel frame permit rough handling. Light weight, easy running. Mounted on our improved Thread-guard Casters, either stationary or swivel.

LANE

Canvas Mill Boxes and Trucks

Born and Raised in the "Southland"

FIG. 20.

Lane Canvas Mill Boxes are free from all roughness, thus reducing waste. Rim bound with tough leather. Shoes of hard maple, renewable.

Sold direct and by leading Supply Houses.

W. T. LANE & BROTHER, Manufacturers, **Poughkeepsie, N. Y.**

NATIONAL ELEVATING ROLLER BEARING CHAPMAN TRUCKS

Cuts Cost of Labor and Cost of Soilage

PLATFORMS are cheap—they can easily be built in any mill. The National-Chapman handles these platforms one after another without the trucker having to unload the material at any time to release the truck. This factor saves 50% to 80% of working time, which is usually wasted in loading and unloading operations.

It is also obvious that material resting on platforms can be kept cleaner than would otherwise be possible. Excessive handling soils goods—takes off a certain amount of original newness and freshness and causes loss where rigid inspection is practiced.

One National-Chapman Elevating Textile Truck saves the cost of from one to four men's labor, according to conditions. The saving of soilage necessarily cannot be reduced to actual percentage but it is a factor to be reckoned with.

Know the National-Chapman! Let us send you Illustrated Catalog C. B. showing sizes adapted to the textile industry.

NATIONAL SCALE COMPANY

5 Bank Street, Chicopee Falls, Mass.

Also distributors of National Counting Machines

All Trucks Equipped with Hyatt Roller Bearings

"Sonoco" Products

Parallel Tubes
Slubbers
Splicing Cones
Cloth Tubes
(Spiral or Solid)
"Yarnsaver" and
"True Standard" Cones

If we are not familiar with your requirements, send samples with initial order. "Sonoco" Products are made by exact machine methods and are **dependable.**

Southern Novelty Co., Hartsville, S. C.

Acme Supplies for the Shipping Room

Patent Coil Holder

ACME DOT EMBOSSED STRAPPING
In coils of 300 and 3000 feet.

ACME

ACME GALV. TWISTED WIRE STRAPPING.

MFRS. OF STEEL BOX STRAPPING
LACQ. & GALV. FINISHED BALE TIES
BUCKLES OF VARIOUS DESIGN

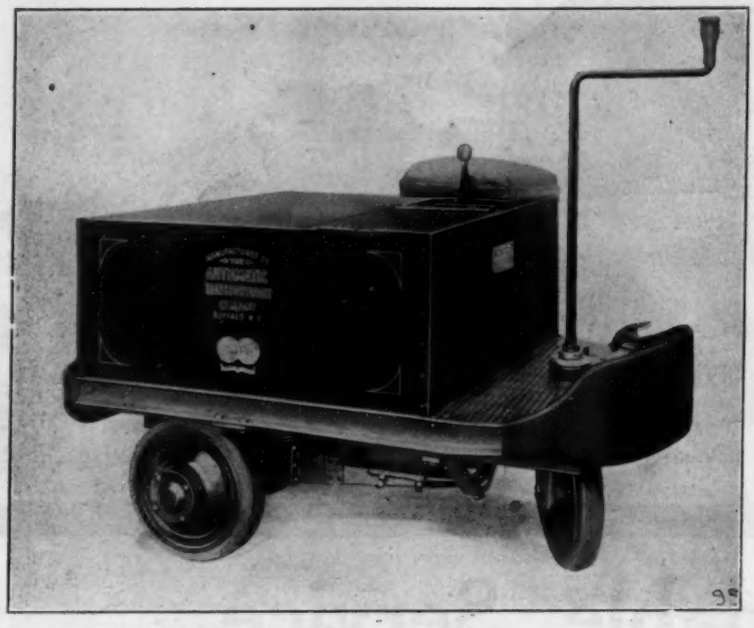
WRITE AT ONCE FOR NEW CATALOG.

No. 4 Acme Buckle

Mfd. By
ACME STEEL GOODS CO.
Works: CHICAGO.
Whse. and Offices at 10-14 Tift St., Atlanta, Ga.

ACME BALE TIES, LACQ. and GALV.

Short of Labor? Use These Tractors



THIS Storage Battery Tractor will turn in a 7½-foot circle. It is capable of hauling several of your present trucks and each truck will follow *perfectly* when equipped with our inexpensive coupling device. You do not have to change your present units—simply substitute one electric tractor for several men and man power.

We have a type of truck or tractor to perfectly meet *your* conditions. Let us show *you.*

The Automatic Transportation Company

2933 Main Street, Buffalo, N. Y.

The only Truck Manufacturers to receive gold medal and highest award at the San Francisco Exposition. Pioneer Manufacturers of Industrial Trucks

BEWARE!

These are troublesome and perilous times. A lot of big mill fires have started mighty curiously—fires that could have been nipped in the bud if those mills had been prepared for them.

Are you prepared? Are you prepared to quench a fire in your mill before it gains headway?

One of the best and cheapest ways for this kind of preparedness is by placing at convenient places a few

ACME FIRE EXTINGUISHERS

There's plenty of chemical in it to put out a good sized fire. It's always ready for use. It will enable you to reduce your insurance rates.

Acme Fire Extinguishers are the approved extinguishers for the cotton mill.

Inspected, approved and labeled by the Underwriters' Laboratories.

Let us send you bulletin "C." Ask for it today on a post card.

Missouri Lamp & Mfg. Company,

St. Louis, Mo.

"Load & Look"

American Kron Scales

AUTOMATIC SPRINGLESS

Made in U. S. A.

All Metal Construction

Kron Scales are giving perfect satisfaction in hundreds of mills and industrial concerns where the saving of time and labor, the elimination of errors and guesswork, mean a saving of money.

Made in types to meet all requirements. Any Capacity.

Write for catalog and complete information.

American Kron Scale Co.

422 East 53rd St. New York

Branch Offices: Boston, Providence, Philadelphia, Pittsburgh, Chicago, Cleveland, Detroit, San Francisco, Wilson N. C.
Southern Office, 405 Urban Bldg., Louisville, Ky.

Dependable Service

at a low upkeep cost.

is what you get from your sturdy Hall Truck.

Hall Trucks are strong, practical trucks—built for the hardships of heavy haulage service.

Every day in the year you will have an economical, efficient haulage system if you are equipped with

THE HALL TRUCK
2-3½-5 TON

Experienced truck buyers choose the Hall for its utter simplicity of construction—its unusually common sense design.

Hall engineers have planned and built for the most severe strains—the hardest tests—the most unexpected emergencies which can possibly occur.

The Motor is the standard "Continental"—the axles are Timken—and the chassis frames themselves are forged and machined from the best steel obtainable right here in our own plant.

For complete details on the Hall Truck—and data on your own Haulage problem, address

LEWIS-HALL IRON WORKS

Mfrs. of the Hall Truck.

DETROIT, MICHIGAN

Established 1873

FEDERAL MOTOR TRUCK COMPANY

MANUFACTURERS OF

FEDERAL
MOTOR TRUCKS

CABLE ADDRESS: FEDTRUCK
WESTERN UNION CODE

REPLY TO ATTENTION OF

Mr. M. L. Pulcher

DETROIT MICHIGAN U.S.A. May 1, 1917.

Federal Motor Truck Company,
Newark, N. J.

Attention: Mr. George Ludlum.

Dear George:

Everything comes to him who waits. You've been looking forward to the complete FEDERAL line. Now it's ready - FEDERAL quality in every needed capacity.

We are going to make announcement of all five models in May - One Ton, One and a Half Ton, Two, Three and a Half, and Five Ton models.

The photo prints I enclose will give you a good idea of the jobs themselves. I think they're corkers. How do they look to you?

Remember — these are not "new" models in the sense of being revolutionary departures from past FEDERALS. All the stamina and reliability of the good old FEDERAL has gone into these models -

- in addition, they have everything that motor truck experience has taught us right down to May 1st, 1917.

This line of FEDERAL trucks is, in essence, the outgrowth of seven years spent in studying the haulage needs of Business.

Features? Every point of FEDERAL construction is a "feature" in the sense that it was designed solely with haulage service in mind.

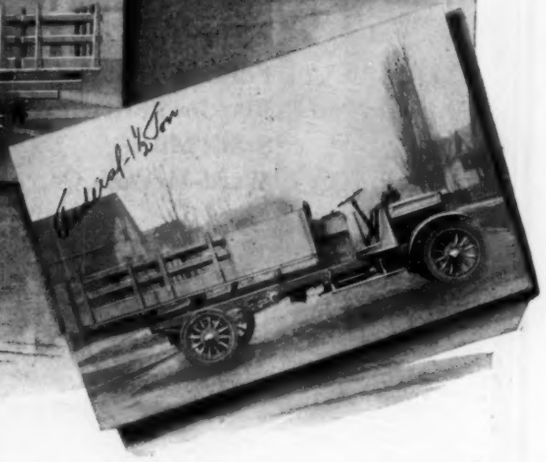
The engine is a truck engine exclusively — "full of pep". The oiling system, by means of pump pressure, increases lubrication as heavy duty or increased speed make it necessary - and so on -

I can't hope to cover all the points here, of course. You have them all in the "Blue Print Book". We are receiving quite a number of inquiries for these. Do not fail to get a supply for distribution.

Now then, here's hoping for the best year yet! I know that this FEDERAL family is going to prove well worthy of its name.

Yours with best wishes,

M. L. Pulcher
Vice President
FEDERAL MOTOR TRUCK COMPANY



WHITE TRUCKS

THERE is a total of 1695 White Truck Fleets now in service. These fleets comprise a total of 17,471 White Trucks, purchased in repeat orders over a period of years. No single truck owners included.

White Truck predominance in practically all lines of business is especially notable among the more experienced truck owners in each business—as in the Cotton and Textile field.

The following is a representative list of Cotton Mills and Textile Manufacturers who own White Fleets.

Amoskeag Manufacturing Co.	Manchester, N. H.
Arlington Mills	Lawrence, Mass.
Avondale Mills	Birmingham, Ala.
Jos. Bancroft & Sons Co.	Wilmington, Del.
Bowen-Jewell Co.	Chattanooga, Tenn.
Cheney Bros.	S. Manchester, Conn.
Conestee Mills	Greenville, S. C.
M. Goldsmith & Bro.	Charleston, S. C.
Louis E. Harrower	Amsterdam, N. Y.
Nelson Knitting Co.	Rockford, Ill.
Pacific Mills	Columbia, S. C., Lawrence, Mass.
Frank F. Pels & Co.	New York City
Rockford Mitten & Hosiery Co.	Rockford, Ill.
Stark Mills	Manchester, N. H.
Ward-Meehan Co.	Philadelphia, Pa.

THE WHITE COMPANY
CLEVELAND

GRATON & KNIGHT

Standardized Series
LEATHER BELTING

Tanned by us for belting use

"Let's scrap our belting specification" said the Master Mechanic

The Purchasing Agent was startled. "Why?" he asked.

"It doesn't protect us," replied the M. M. "We buy lots of belting for First Quality that proves to be mixed with seconds and shoulder. We can't test every roll—and you know mighty well there's nobody in this shop wise enough to detect skillfully mixed belting."

"What'll we do?" inquired the P. A.

"I'd advise that we adopt the Graton & Knight Standardized Series as our own belting standards. They're the largest belt makers in the world—been 66 years developing and classifying their Series of Brands, until it covers every possible belt need. And the individual Brands run absolutely uniform—I've used enough to know that."

"How does it work?"—the Purchasing Agent was interested.

"You simply get a set of the Graton & Knight Standardized Belts as recommended for our needs, with the official description of each. Then when you need a belt, you select the brand that's right for the job—get bids on that or equal. Thus you make *actual service* the basis of comparison—not just a written specification."

"I'll go you, Joe," cried the P. A. "If there's one thing I've always wanted to standardize, it is our belting—but I haven't known how to go about it. I'll have the Graton & Knight salesman come and tell us how to do it. Be sure you're there, Joe."

Are YOU buying belts on discount—or on performance?

Do you KNOW when your specification is met—or do you take a chance?

The only way to be sure of belting is to have a simple, safe and trustworthy set of real belting standards to go by. Graton & Knight Standardized Series furnishes this.

Write today for the Graton & Knight Belting Book—or have the nearest Graton & Knight representative call on you.

The Graton & Knight Mfg. Company

Oak Leather Tanners. Makers of Leather Belting, Lace Leather, Leather Packing and Specialties

Worcester, Massachusetts, U. S. A.

BRANCHES

Atlanta	Detroit	New Orleans	Portland, Ore.
Boston	Fall River	New York	St. Louis
Chicago	Kansas City	Philadelphia	Seattle
Cleveland	Minneapolis	Pittsburgh	Leicester, England

SELLING AGENTS

Graton & Knight Mfg. Co. of Texas., Dallas, Texas.
Graton & Knight Mfg. Co. of Wisconsin, Milwaukee, Wis.
Graton & Knight Mfg. Co. of California, San Francisco, Cal.

GRATON & KNIGHT

The illustration shows a 16-inch G. & K. Nigger Head Drive. Bird & Son, East Walpole, Mass.

CHAPMAN BALL BEARINGS

Saving Profits

"During the next ten years some of the largest profits in American Industry will be saved out of operation. Heretofore profits have been made, but saving a profit is altogether different."

CHAPMAN BALL BEARINGS

the bearings with the double row of balls—begin the saving at the very source of loss. They can save every ounce of that power that is wasted now in overcoming the frictional resistance of those plain bearings on your lineshafts. That waste, eating into your profits, amounts to more than you may think. Some of your profits from these days of prosperity, invested in Chapman Ball Bearings, will help you pay dividends in days of keener competition.

Investigate—Send for our book on Bearings.

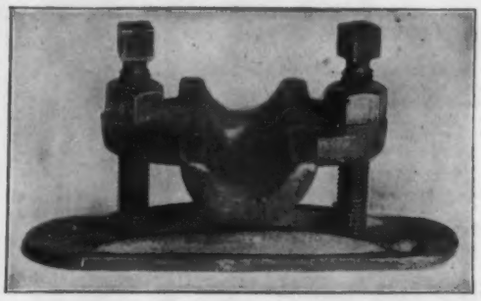
TRANSMISSION BALL BEARING COMPANY, Inc.

1050 Military Road, BUFFALO, N. Y.

New York: Room 101, 30 Church St. *Branch Offices* Philadelphia: Bourse Building

CHAPMAN DOUBLE BALL BEARING CO., Ltd., 339-351 Sorauren Ave., TORONTO, ONT.

DAY Adjustable Rocker Shaft Bearings



No. 1 A. Patented Oct. 26, 1915.

THIS is just a common sense attachment that has not failed to satisfy a single mill.

Your rocker-shaft troubles will be over when you equip your looms with Day Adjustable Bearings. They will save you the cost of a new rocker shaft for all time, reduce seconds and thin places, save in supplies, break-outs, and in many other ways.

As one Georgia mill superintendent wrote us,

"Any practical mill man who will test these bearings, will find at least twenty different ways in which they will keep the loom in better shape and increase production. I would advise any mill man to try these bearings and be convinced of the merit of it, like I have been."

This man equipped his 1820 looms with Day Adjustable Bearings.

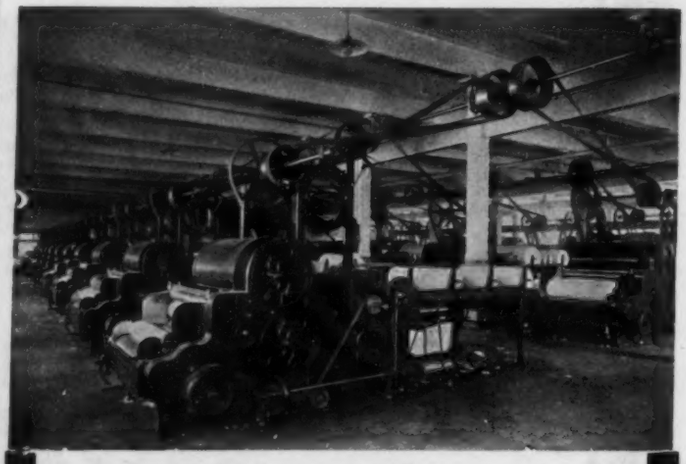
Any of the many mills using them will tell you about their many advantages.

Let us send you a pair for trial. State kind of loom. Write today.

Textile Specialty Company

(*Formerly Day Adjustable Bearing Company*)

GREENWOOD, S. C.



Installation of Cotton Pickers with Ball Bearing Beaters.

Save Power by Stopping Friction

Shutdowns, especially during these busy times, are costly.

You can save power, avoid shut-downs, and speed up your pickers to the utmost if they are equipped with Hubbard Ball Bearing Boxes. The beater then runs at a constant speed and thus produces a uniform lap.

Hubbard Ball Bearing Boxes were first applied in cotton pickers early in 1913, and today the original boxes are in constant service, proving their practicability and durability.

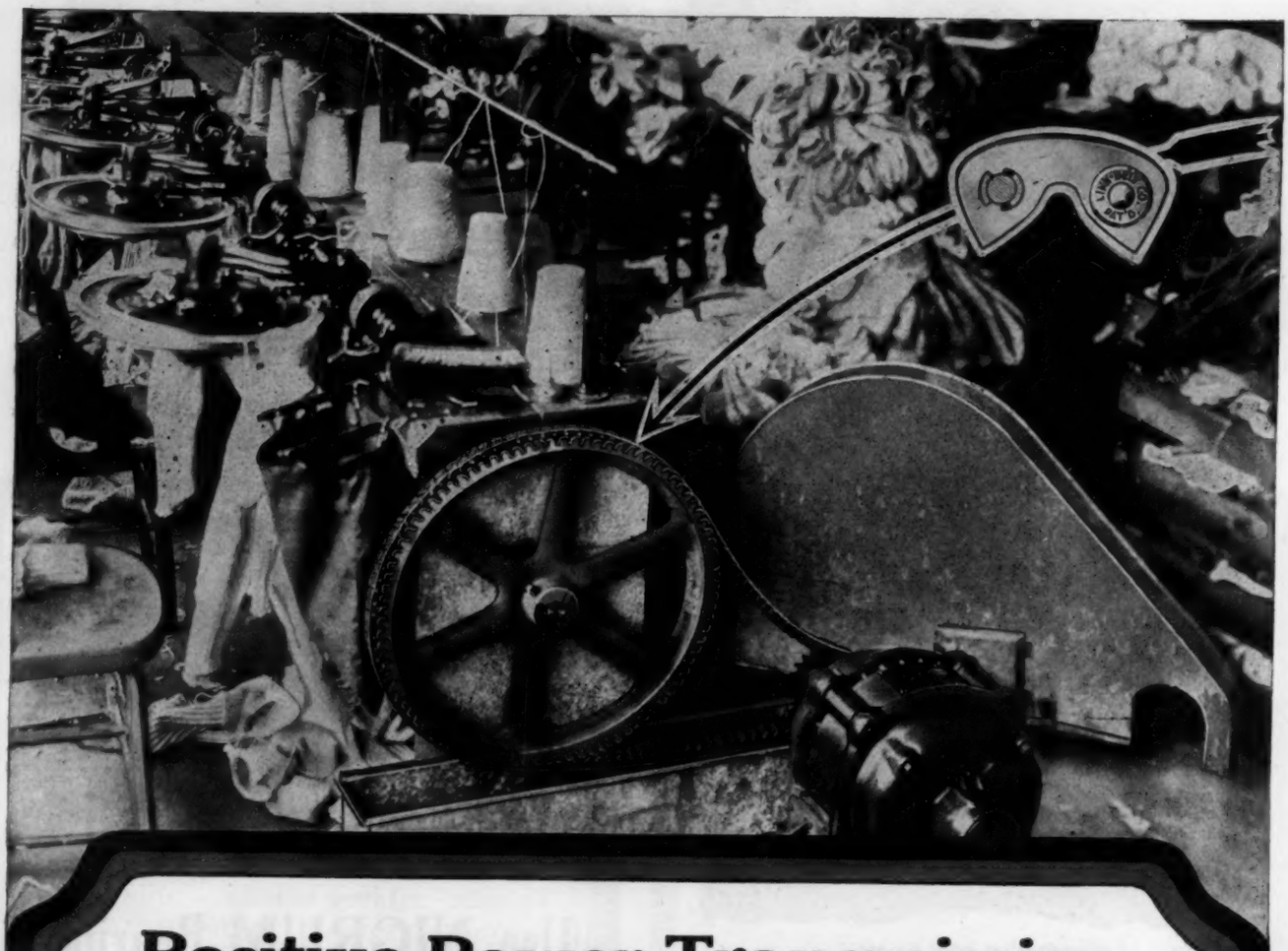
S K F Ball Bearings are used in Hubbard Boxes, which insures superiority in the bearings.

Our bulletin is well worth reading. Tell your stenographer to drop us a line for it today.

Hubbard Machine Co., Worcester, Mass.

Mr. Sidney H. Scott, Greenville, S. C.

HUBBARD BALL BEARING BOXES



Positive Power Transmission

YOU CAN operate every machine in your mill without slip or loss of power under any atmospheric conditions. Observing mill men realize that positive drives insure the efficient use of power and labor.

LINK-BELT
SILENT CHAIN DRIVES

are positive under all conditions of load—over 98% efficient in hot, cold, damp or oily places. Study the present power transmission in your mill and decide for yourself how you can increase production and improve output by transmitting power through the Link-Belt Silent Chain Drive. It is "Flexible as a Belt—Positive as a Gear—More Efficient than Either."

Write for Data Book No. 125, which explains all about Silent Chain Drives and shows how to figure them, and to determine prices.

LINK-BELT COMPANY

PHILADELPHIA CHICAGO INDIANAPOLIS

New York	299 Broadway	Seattle	530 First Ave., S.
Boston	49 Federal St.	Portland, Ore.	14th & Lovejoy Sts.
Pittsburgh	1501 Park Bldg.	Los Angeles	161 N. Los Angeles St.
St. Louis	Central Nat'l Bank Bldg.	Denver, Lindrooth, Shubart & Co.,	Boston Bldg.
Buffalo	698 Ellicott Square	San Francisco	461 Market St.
Cleveland	1304 Rockefeller Bldg.	New Orleans, Whitney Sup. Co.,	418 S. Peters St.
Detroit	732 Dime Bank Bldg.	Birmingham, D. T. Blakey,	309 Am. Trust Bldg.
Wilkes-Barre	2nd Nat'l Bank Bldg.	Knoxville, Tenn.	Empire Bldg.
Minneapolis	418 So. Third St.	Charlotte, N. C., J. S. Cothran Com'cial Bk.	Bldg.
Louisville, Ky.,	Frederick Wehle, Starks Bldg.	Toronto, Canada	Canadian Link-Belt Co., Ltd.

We have branch offices at every important port of export on the Pacific Coast, and can ship from Vancouver, Seattle, San Francisco and Los Angeles, routing European shipments via Pacific Ocean lines should this be preferable to shipping via the Atlantic.

FREADRICH BELTING CO.

MANUFACTURERS OF

Oak Tanned LEATHER BELTING Surface Tanned and Waterproof

LACINGS CEMENTS DRESSINGS

SLABS STRAPS

SOUTHERN REPRESENTATIVE M.E. STEVENS 316 PEACHTREE ST., ATLANTA, GA.

St. Louis, Mo.

EXPORT DEPARTMENT NEW YORK, U.S.A.

SAVE RESPLICING COSTS AND DELAYS

When one of the individual ropes on your English system rope drive stretches you simply place a clamp around each half of this coupling, hold one rigidly and twist the other.

The rope is shortened by twisting up the strands and an internal lock holds the rope to the shorter length.

Hunt Coupling ready for use.

By this coupling you maintain the rope at its original diameter, control all stretch during its life and the rope is shortened without removing it from the pulleys.

Ask for Catalog W-15-1 giving full information regarding the coupling and describing our "Stevedore" Transmission Rope which is particularly made for power transmission purposes.

C. W. HUNT CO., Inc.,

WEST NEW BRIGHTON, N. Y., U. S. A.

61 Broadway, N. Y. City. Fisher Bldg., Chicago.
Munsey Bldg., Washington.

For Efficiency and Economy

Trade-Mark

Use NIGRUM Bearings

Reg. U. S. Pat. Off.

You'll never have to stop your machine, due to the neglect of someone to properly oil it, providing you use NIGRUM Bearings.

NIGRUM Bearings run smoothly and evenly without oil, grease or attention. They will save you money by saving you oil, and eliminate much of the wear and tear upon the working parts of the machine.

Also manufacturers of **BOUND-BROOK** Graphite and Bronze Oil-less Bearings.

Write for Interesting Booklet, "Oil-less Bearings."

BOUND BROOK OIL-LESS BEARING CO.

10 Church St., BOUND BROOK, N. J.

All Genuine Graphited "Oil-less Bearings" have always been made at Bound Brook, N. J., in the United States of America.

Full Automatic, Semi-Automatic and Hand Operated

Gear Cutting Machines

Especially adapted for use in Cotton Mills. Hundreds now in use. Send for Special Circulars.

The D. E. Whiton Machine Co.,

NEW LONDON, CONN.

The reputation behind every

AMERICAN STEEL SPLIT PULLEY

is a guarantee of unsurpassed and dependable service.

American Steel Split Pulleys are the *original* steel pulleys. No other make has been devised approaching the "American" pulley in simplicity and correctness of design.

American Steel Split Pulleys are light and strong—easy to install, no keyway or set screw in most cases, interchangeable bushings made to fit different sizes of shafts, not necessary to strip shaft to put on "American."

"Americans" deliver maximum power with minimum belt slip — stand greater strains than other heavier pulleys—offer least air resistance, because of edge-on-arms, cut the air instead of fanning it—endure higher speed.

Over 60,000 pulleys —3 in. and above in diameter — stocked at centers named below, and additional thousands stocked by over 200 dealers.

AMERICAN PULLEY CO.
4236-60 Wissahickon Ave. Philadelphia, U. S. A. New York—33-35 Greene St. Boston—165 Pearl St. Chicago—114-116 S. Clinton St. Seattle—536 First Ave., South. Williams & Wilson, Ltd., Montreal. The A. R. Williams Machine Co., Ltd., St. John, N. B., Toronto, Winnipeg, Vancouver.

99 50/100% PURE

You're Losing Money If Your Welding Gas Isn't Absolutely Pure

Regardless of the quantity of oxygen gas your welding jobs consume, if this gas isn't the purest that can be bought, you are losing money. The purer the gas, the lower your welding costs.

When you use BURDETT OXYGEN you are reducing your welding costs to a minimum, for BURDETT OXYGEN is 99½% PURE—the best that can be bought.

There is a Burdett Plant near you.

Save delay by ordering from the nearest Burdett Plant.

Chattanooga, Tenn.
Fort Worth, Texas.
Denver, Colo.
Seattle, Wash.
Detroit, Mich.
Logansport, Ind.
Norristown, Pa.
Oklahoma City, Okla.
St. Louis, Mo.
Butte, Mont.
Philadelphia, Pa.
Pittsburgh, Pa.
Cincinnati, Ohio
Los Angeles, Cal.
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Burdett Oxygen Co. and Associated Companies

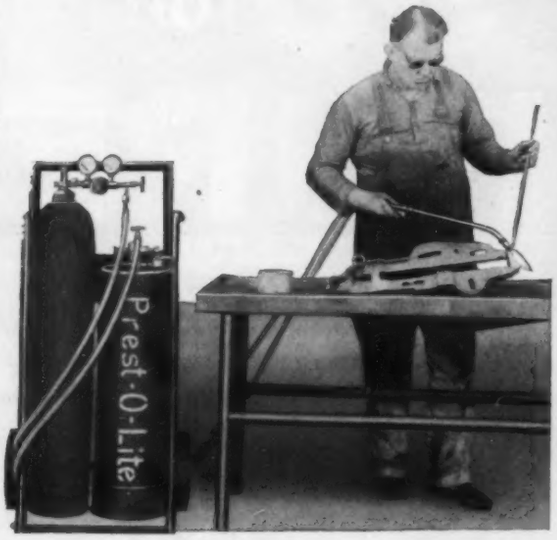
Chicago
St. Johns Court.

Denver
Gas and Electric Building.

BURDETT OXYGEN

"The Best by Test"

Oxy-Acetylene Welding and Cutting



Time and Money Saved by Welding This Shuttle Box

By the oxy-acetylene welding process this shuttle-box was made good as new at a cost of 50c.

In making this repair right in its own shop, this mill saved not only the cost of a new shuttle-box, but also the valuable time it would have taken to secure a new part.

Every textile mill has many opportunities to make substantial savings by the use of ovy-acetylene welding for repairing broken or worn machinery or tools, also for the reclamation of valuable material from the junk pile.

Investigate what welding will do for you.

Prest-O-Lite PROCESS

Employs both gases (acetylene and oxygen) in portable cylinders. Prest-O-Lite Dissolved Acetylene (ready-made carbide gas) is backed by Prest-O-Lite Service, which provides dry, purified gas, insuring better welds, quicker work, and lower cost, and also avoids the large initial outlay and heavy depreciation incurred in making crude acetylene in a carbide generator.

Necessary equipment is not expensive. We furnish high-grade welding apparatus for $75 (Canada $100); acetylene service at additional cost. Adaptable for oxy-acetylene cutting by the addition of special cutting blow-pipe. Thorough instructions are furnished free to every user of Prest-O-Lite Dissolved Acetylene—any average workman who understands metals can learn the process quickly and easily.

Ask for valuable data showing the work others are now doing and how readily you can effect equal savings in your mill.

The Prest-O-Lite Company, Inc.

U. S. Main Office and Factory:
836 Speedway, Indianapolis, Ind.
Canadian General Office, Dept. A. E., Toronto, Ont.

55 Branches and Charging Plants.

World's Largest Makers of Dissolved Acetylene

B-W OXYGEN 99.5 PURE

In addition to our Oxygen Plant at Chattanooga we have recently opened a plant at Savannah, Ga., in connection with the Southern Cotton Oil Co., which we believe is the largest and most up-to-date Oxygen plant in the South.

This Oxygen is of the same high grade as the other products which characterize the Southern Cotton Oil Co. The cylinder and valve equipment is the latest and most up-to-date, and we can guarantee shipments the same day order is received.

Our long experience in Cotton Mill work is at your command, and we should be pleased to quote prices on Oxygen or welding equipment and supplies.

BIRD-WILCOX CO., Inc.

Atlanta **Charlotte**
Chattanooga **Savannah**

THE SITUATION—Power plant costs growing overnight.

OFFSETTING THIS—you can look to

Foster Steam Specialties

for economy in the regulation and control of pressure; air, water, steam or gas.

We mention

Foster Float Valve

as a means of holding a constant level in any tank with a minimum of waste. It is actuated primarily in its movements by the fluid pressure in the supply pipe and is adaptable to difficult locations and extraordinary service.

Whatever your conditions may be—tell us about them. Our engineers can help you with the toughest valve problem.

We make high pressure regulators, low pressure regulators, non-return stop valves, back pressure valves, pump governors, fan engine regulators, relief valves, etc.

FOSTER ENGINEERING CO.

NEWARK, N. J.

180 No. Dearborn St.,	Chicago, Ill.
404 Arrott Bldg.,	Pittsburgh, Pa.
161 Summer St.,	Boston, Mass.
712 Harrison Bldg.,	Philadelphia, Pa.

"Reliability Their Main Feature"

THESE PROGRESSIVE MILLS MAKE CONDENSATION PAY A PROFIT!

LEADERS IN THE TEXTILE Industry—executives who figure costs down to the last cent—are using the Morehead Back-to-Boiler System to make condensation pay a profit.

You cannot eliminate condensation but you can return it immediately to your boilers as pure hot feed water—reducing the cost of your fuel from 15% to 25%. The

Morehead
Back to Boiler
SYSTEM

is comprised of a line of steam traps adapted to every textile mill condition which can arise.

But the Morehead System does more than save a large part of your fuel bill—it eliminates forever sluggish circulation in your steam lines and keeps your machines operating at their highest possible thermal efficiency.

Tell Us About Conditions In Your Boiler Room

Write us about the troubles you are having with the condensation problem and our engineers will be glad to advise you fully free of charge. Address—without obligation—

Morehead Manufacturing Co.
Cotton Mill Dept.
Detroit, Michigan

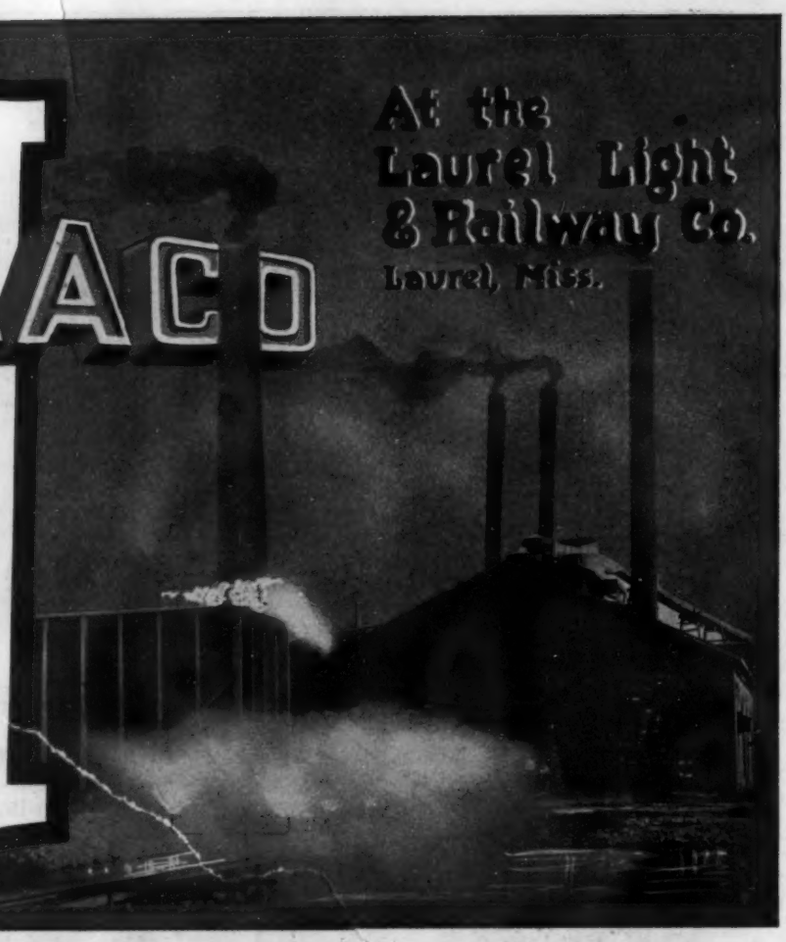
SPRACO

AT the Laurel Light & Railway Company, Laurel, Miss., they at one time considered their wooden cooling tower unbeatable, but that was before they installed the "Spraco" System for cooling condensing water. Their abandoned cooling tower is shown at the left of the power house in the picture. Only a part of the main pipe line of the "Spraco" System is shown. Note that this pipe line was installed in a trough which was originally constructed to carry hot water from the power house to the farther end of the pond.

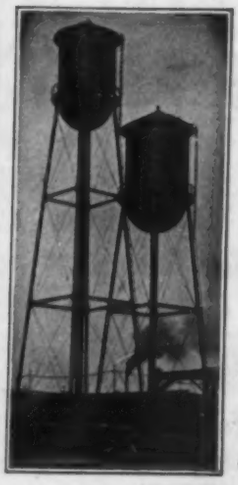
This "Spraco" Cooling System has increased their vacuum by several inches. It was installed for less than a new cooling tower would have cost, and its operating cost is about half as much. Practically nothing is required for maintenance. Less make-up water is required.

Our engineering staff will gladly consult with you about your cooling problem without obligation. Write today for full information.

Spray Engineering Co.
93 Federal St. BOSTON, MASS.



TOWERS and TANKS
That are Built Right



Boilers,

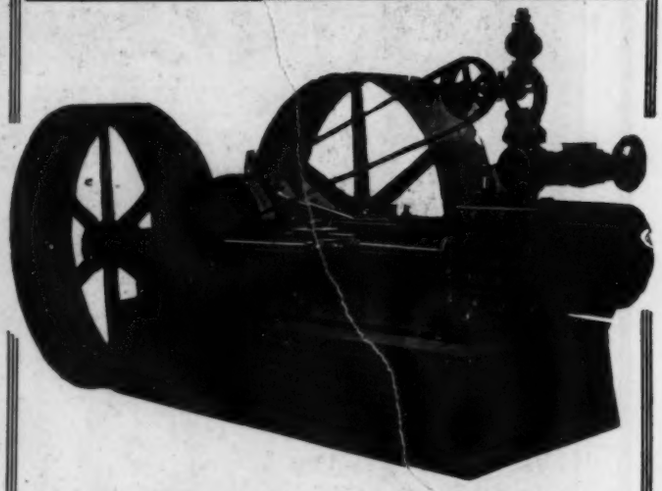
Structural Steel Work

Sheet Steel and Plate Work

Boiler Tubes, Castings, Etc.

Tell us what you want and let us quote prices.

The Walsh & Weidner Boiler Co.
Chattanooga, Tenn.



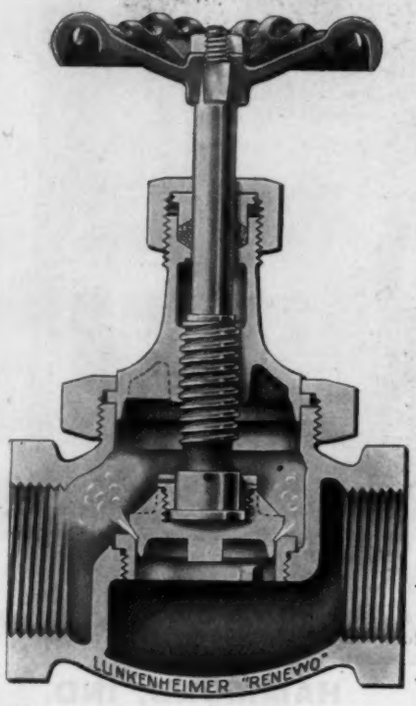
J. S. SCHOFIELD'S SONS CO.,
Macon, Georgia

MANUFACTURERS OF

High Pressure Return Tubular Boilers, High Grade Stationary Steam Engines, Tanks, Stacks, Stand Pipes.

Heavy Castings and Wrought Iron Works.

—Inside Information for Valve Users



Self-cooling hand-wheel secured to stem by lock-nut

Stem of Lunkenheimer "Stem-Bronze"

Large and deep Stuffing Box, packed for service

Shoulder on stem forms steam tight seat under Stuffing Box for repacking

Extra long Acme Thread. Full contact at every degree of opening.

Original Union Bonnet protects thread from action of steam. Forms guide for regrinding.

Renewable Nickel Seat and Disc have regrinding seating surfaces. Disc is provided with Lunkenheimer "seat guard"

Flow areas in excess of pipe areas

Threads over length

Body of Lunkenheimer "valve bronze"

The LUNKENHEIMER "Renewo" Valve

from its very inception has been so far ahead of every other valve of this type as to be in a class by itself. It incorporates improvements, which, though simple, enhance its durability and make it practically indestructible.

The seat and disc—the parts subjected to the most wear, have regrinding seating surfaces; they are made of a High Nickel alloy having exceptional wearing qualities, and to further enhance their durability the disc is provided with the well-known Lunkenheimer "Seat-guard" which materially aids in preserving the seating surfaces and keeping them clean. Besides, both the seat and disc can easily be renewed.

The other parts are in keeping with the well-known high standard of design, material and workmanship which characterizes all Lunkenheimer Products.

Your local dealer can furnish them; if not, write us.

Write for booklet 535-AK.

THE LUNKENHEIMER CO.

"QUALITY"

Largest Manufacturers of High Grade Engineering Specialties in the World.

New York Chicago CINCINNATI Boston London

I-13-10

QUALITY FIRST

Should be the determining factor when buying Machine Tools and Mill Supplies. The companies we represent are the manufacturers of the best in their line—assuring best quality—backed by our personal guarantee, "Satisfaction in every transaction.

Selling Representatives:

Lodge & Shipley Lathes
South Bend Lathes
Rockford Lathes
Acme Turret Lathes
The Skinner Chuck Co.
Weaver Garage Equipment

Cincinnati Millers and Grinders
Cincinnati Planers and Boring Mills
Cleveland Open Side Planers
Landis Bolt Cutters
Landis Grinders

Gould & Eberhardt Shapers and Gear Cutters
Cincinnati Bickford Upright and Radial Drills

E. O. Partridge Emery Grinders
Armstrong-Blum (Marvel Power Hack Saws)
Greenerd Arbor Presses

Bullard Boring Mills and Vertical Turret Lathes
Williams-White Punches and Shears
Stoever Pipe Cutting Machines
Baker Bros. Drills and Key-seaters

WHITING FOUNDRY EQUIPMENT COMPANY

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Imperial Brass Mfg. Co. (Welding Outfits)
National Steam Pump Co.
Bailey-Burruss Mfg. Co.
Stover Mfg. & Engine Co. (Gas Engines)

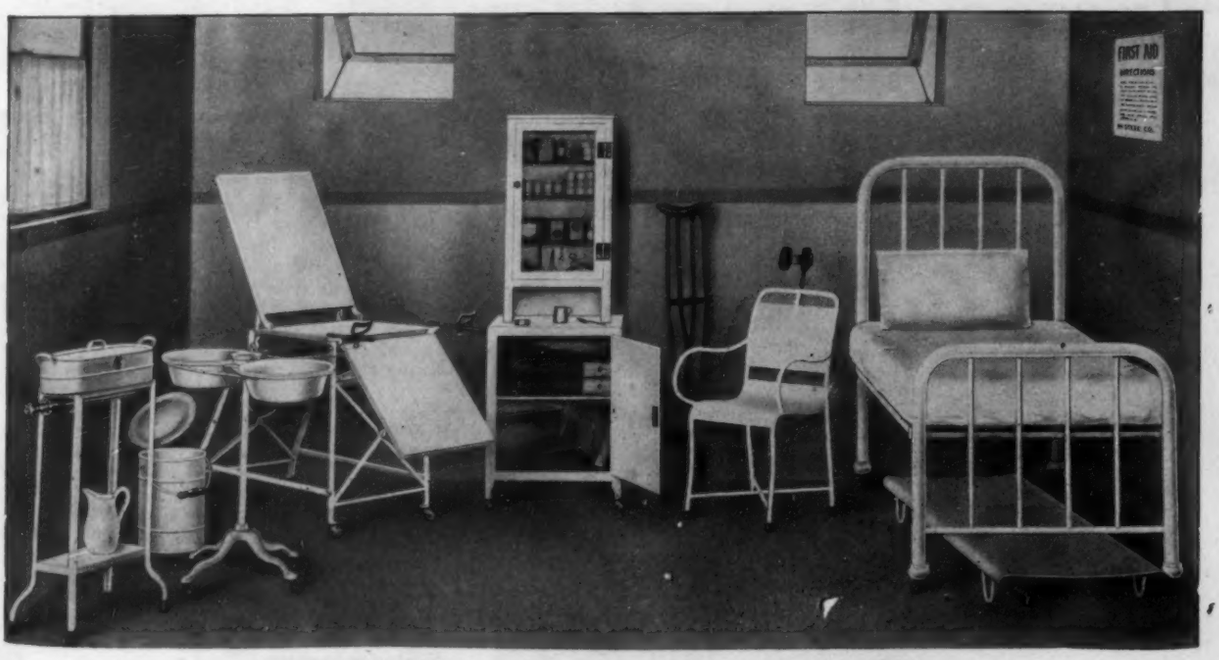
Homestead Valve Mfg. Company

SEEGER-WALRAVEN COMPANY

Machine Tools---Mill Supplies---Foundry Equipment

38 West Alabama Street Atlanta, Georgia

"Quality is Economy"



A NEW INDUSTRIAL FIRST AID OUTFIT.

Designed by the surgeon in charge of one of the largest Industrial plants in the country, and comes complete with everything needed for First Aid work.

Let us quote you manufacturer's prices on our New First Aid equipment or on a special outfit that better meets your requirements. Send for booklet describing First Aid or Emergency equipments.

FRANK S. BETZ CO. - - - - HAMMOND, IND.

Insuring Maximum Efficiency in The Textile Office.

America's part in the World War calls for close attention to secure maximum efficiency in every department.

Your profits, as well as the prominence of the part you will play, will depend largely upon the elimination of any wasteful method in the office as well as in the plant proper.

THE MONROE

Calculating-Adding Machine

is to textile accounting what the Chadwick-Hoskins Company, of Charlotte, N. C., recently said of it:

> "The Monroe is filling a long felt need in the Cotton Mill Offices, where there is considerable use for such a machine as you have gotten out."

Whether applied to your weekly payrolls, production figures, invoices, audits, or your simple figure routine, the Monroe handles with great facility, each of the various mathematical problems.

Simply a forward turn for Addition and Multiplication and a reverse turn for Subtraction and Division. A low first cost—a five-year Guarantee—a "no repair bill" record—a "visible check"—these are Monroe features that spell its success in the textile world.

The best way for you to know of Monroe application to your work is by a direct test. Since there is no obligation, may we have the coupon by return mail?

Monroe Calculating Machine Company

General Offices, Woolworth Bldg., New York City.

Offices in Principal Cities.

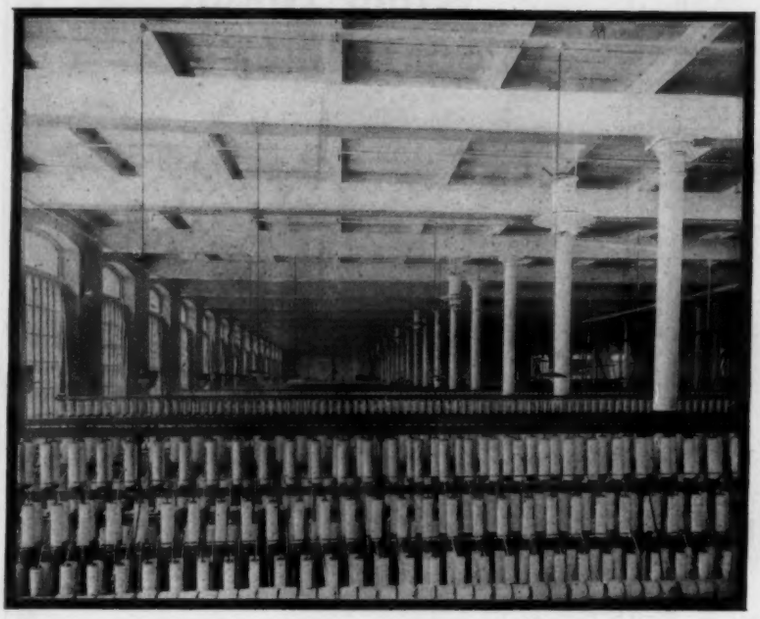
"Textile Accounting by Machines" mailed on return of coupon. Demonstration without obligation.

To Monroe Calculating Machine Co., Woolworth Building, New York, N. Y.
Please give us (check the item desired):
☐ Further information concerning the Monroe Calculating Machine and how it will save time in
(a) Figuring Cloth Construction.
(b) Production Costs.
(c) Percentages.
in our own office.
☐ A demonstration in our own office.

Firm Name .....

Individual's Name .....

Address .....



Interior Delph Spinning Mills, Philadelphia, Pa.

Let's suppose this is your Mill—

Yours or not, its splendid brightness of interior can be yours any time you will. By coating your ceilings, columns and walls with a semi-gloss, pure white finish, of tile-like smoothness and lustre, plus the washability of tile, you make a literally new working-place of your once dark and dangerous interior.

ARCO-RAYS
"LENGTHENS YOUR DAYS"
TRADE MARK

diffuses all the light from lamps or windows

ARCO-RAYS is a semi-gloss, pure-white finish for textile mill ceilings, columns and walls, of the greatest light-diffusing power and the longest life. It is non-yellowing, non-poisonous, and washable; never cracks, flakes or peels.

The transformation in working conditions wrought by ARCO-RAYS is not only a godsend to employes—it is profit-producing to the mill-owner. Nothing so promotes good temper, relieves fatigued eyes, eliminates the mistakes and accidents due to uncertain light, and shortens artificial light-bills by prolonging natural daylight an added hour—as the use of ARCO-RAYS.

Every one of these benefits lowers the cost of production and increases its quantity and quality—its profit to you.

Buy it by test. Apply it to a few square feet of wall-space alongside any other brush-applied product, and let the result in superior whiteness, light-diffusion and permanence be your reason for selecting ARCO-RAYS.

Write us whether your walls are of wood, brick, stone, concrete or other masonry, area of wall-surface, and use to which rooms are put, and we will supply material estimate without obligation. Any good painter will tell you cost of application.

1195 WISE BUILDING

THE ARCO COMPANY
Founded 1880
Paints, Varnishes and Enamels

CLEVELAND OHIO

This

or

This?

Which Shall It Be?

—one, the common drinking cup, breeding disease thruout the plant, and disease means inefficiency; or is it the sanitary Rundle-Spence fountain, ever ready with a pure fresh drink?

Send for a catalog explaining and illustrating a most complete line of sanitary drinking fountains—yours for the asking.

Rundle-Spence Mfg. Company
Milwaukee, Wis.

What About Your Mill Office?

IS your office just a plain "cotton factory" office with worn-out furniture and inefficient filing systems, etc? Or is it a modern "Textile Mill" office, with up-to-date office furniture and "easy of access" filing systems—an office that has a brisk, business-like look to it?

Let us make your office up-to-date. We carry everything for the mill office, —desks, chairs, tables, Globe-Wernicke filing cabinets,—anything that is used in an office.

Our Prices are Right—
Our Service is Prompt

Baylis Office Equipment Company
Atlanta, Ga.

The fountain is Cork Jacketed 15 1-2 Coils of 1-2 in. Brass Pipe and Keith Bubbler; Capacity Continuous Line of Users

Drink right from the fountain without cups or contamination. The water is cooled as it flows from the municipal supply pipe through the cork-jeoketed ice tank to the Keith Bubbler.

One supply of ice lasts through the hottest day and cools all the water ever required.

Everybody likes the bubbler because it's sanitary.

GET OUR CATALOG

Send for our complete catalog, showing our Wash Bowls, Metal Lockers, All Steel Stools and Chairs with Inset Wood Seats, Stock Storage Racks, Metal Shelving, Metal Vault Fixtures, Improved Soda Kettles, 40 and 60 gallons, Water Heaters and Instantaneous Mixers, Bubbling Drinking Fountains, Workbenches and Bench Legs, Drawing Stands, etc.

Manufacturing Equipment and Engineering Co.
136 Federal St.
Boston, Mass.
Address all communications to Framingham, Mass.

30 of the South's Largest Mills use

WOLF'S MILL WHITE

It is one of the few mill white paints that meets the demand for efficiency and economy in this kind of material. It is no experiment. It's a paint that has "made good" in some of the largest mills of the South, including the Henrietta Mills, Hawthorne Spinning Co., and many others. Its use is spreading day after day.

Used in your mill, it will brighten up the interior—cut down your light bills—and save you money in your paint appropriation because it outwears any other and will not crack, peel or flake off.

A trial order will demonstrate the superior qualities of Wolf's Mill White. Send in an order today.

Price per gallon, $1.60.

Leon L. Wolf Paint Company,
304 Lincoln Inn Court, Cincinnati, Ohio.

Above everything else **the name CERTAIN-TEED stands for quality, efficiency and economy. Any product bearing the name CERTAIN-TEED will deliver all three in heaping measure.**

Certain-teed
Roofing in Rolls

For textile mills, power plants, warehouses and outhouses with either flat or pitched roofs, this is the **ideal** roofing. It is a quality roofing made from the best roofing felts thoroughly saturated with our special blend of soft asphalts and then coated with a harder blend to preserve and keep it soft.

It costs less to buy, less to lay, less to maintain and less per year of life. It is light-weight, clean, sanitary and fire retardant; will not dry out and is weathertight.

CERTAIN-TEED Roofing is made in three thicknesses and guaranteed for 5, 10, or 15 years according to thickness, (1, 2 or 3 ply), by the largest prepared roofing and building paper concern in the world.

CERTAIN-TEED Roofing is put up in rolls, 32 inches wide containing 108 sq. ft., and includes nails, cement for laps and full directions for laying.

Certain-teed
Slate Surfaced Shingles

For churches, cottages and similar buildings in mill villages these shingles give the handsome and artistic appearance of solid slate but at considerably lower cost.

They have all the advantages of Certain-teed Roofing, but in addition are heavily surfaced with genuine crushed slate in natural colors of red and green.

They will not crack, warp, split, curl or fall off. They **stay flat.** They are far superior to wood shingles, because they look better, lower "over-head expenses" and do not need painting. There is no waste in laying because each shingle is perfect and uniform.

They are guaranteed for ten years.

They are put up in wooden crates, each containing 212 shingles. Two crates cover 100 sq. feet. Gross weight 24 lbs. Each shingle measures 8" x 12 3-4" and should be laid 4" to the weather.

Certain-teed Paints and Varnishes

We are prepared to meet specifications required for all kinds of paints and varnishes used in mill districts. Items of special interest include Mill White, Floor Varnish, House Paints and Metal Paints.

CERTAIN-TEED Products are handled by dealers everywhere, but if your nearest dealer cannot supply you, write our nearest Sales Office.

CERTAIN-TEED PRODUCTS CORPORATION

General Roofing Mfg. Co., Gregg Varnish Co., Mound City Paint & Color Co.

New York Chicago Philadelphia St. Louis Boston Cleveland Pittsburgh Detroit Buffalo San Francisco
Milwaukee Cincinnati New Orleans Los Angeles Minneapolis Kansas City Seattle Indianapol's Atlanta
Richmond Grand Rapids Nashville Salt Lake City Des Moines Houston Duluth London Sydney Havana

ANCHOR POST FACTORY FENCES

"No use, Bill, we can't get over that."

PROTECT your factory with an **Anchor Post Chain Link Woven Steel Fence** and it will prove to be an impassable barrier to tramps, thieves and all other would-be trespassers.

Hundreds of manufacturing companies, both large and small, have found these fences a sure protection against loss.

The superiority of Anchor Post Construction has been demonstrated by years of service. The Posts, upon which the life of a fence depends, are U-bars of high carbon steel, the strongest shape and toughest material obtainable. They are driven into the ground and are permanently held in perfect alignment by means of Anchor stakes driven diagonally through slots clamped to opposite sides of the posts. Fences and Gates are heavily galvanized throughout, to prevent rust.

CATALOG. The Anchor Post Factory Fence Catalog covers the whole subject of protective factory fences in a most thorough manner. May we mail you a copy?

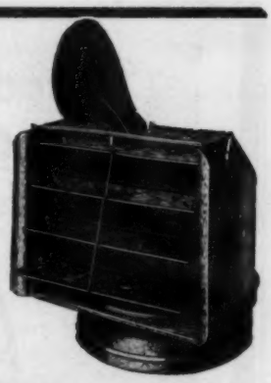
ANCHOR POST IRON WORKS

11 Cortlandt St., So. (13th Floor) NEW YORK

Philadelphia — Cleveland — Boston — Hartford — Newark

2159-G

MAKE the MOST OF NATURE



WHERE water power is available you don't find many mills operating on steam power. Why waste power on your ventilating system?

SWARTWOUT ROTARY BALL-BEARING VENTILATORS

cost nothing to operate because they require only the free power of the passing breeze. A suction is created before the mouth which is continually filled from the foul air below, thus giving positive, continuous ventilation. No attention is needed for lubrication or repairs because there is nothing to wear out.

Swartwout Ventilation is fresh air satisfaction.

THE OHIO BLOWER CO.

5151 Perkins Ave., CLEVELAND, OHIO

Showing "Swartwout" on roof of hosiery mill, louvers in closed position.

SLAG WINS AGAIN

Strength and Elasticity of Slag Concrete Demonstrated

Under the supervision of the City Building Inspector the Test tabulated below was made on the fourth floor of

THE BIRMINGHAM NEWS BUILDING

Total area covered 25'x25.27'—631.75 sq. ft. Total load of Pig Iron evenly distributed was 332,000 lbs.—525.50 lbs. per sq. foot. Maximum deflection under full load was ¼". Entirely recovered when load was removed. Time consumed in applying load 4 days. Full load allowed to remain 18 hours.

REINFORCED CONCRETE THROUGHOUT

1,500 TONS SCREENED ENSLEY BASIC SLAG USED

Joy & Gallup, Architects and Engineers, Birmingham, Ala. Evans Bros. Const. Co., Contractors, Birmingham, Ala. W. C. Spiker, Consulting Engr., Atlanta, Ga.

A technical description of the above test and also a reproduction of "Slag as a Concrete Aggregate," by Sanford E. Thompson, Consulting Engineer, Boston, Mass., will be cheerfully furnished to Engineers, Architects or others interested. Address:

BIRMINGHAM SLAG CO.

Branch Office:
716-17 Empire Bldg.
Atlanta, Ga.

General Offices:
1607-17 Jeff. Co. Bank Bldg.
Birmingham, Ala.

Representatives:

Macon, Ga., D. W. Hill & Co.
Savannah, Ga., M. Thomson.
Waycross, Ga., Whitman Commission Co.
Thomasville, Ga., Standard Sales Co.
Jacksonville, Fla., Standard Sales Co.

Every Post a Watchman
Every Link an Eye

CYCLONE
PROPERTY PROTECTION FENCING PAYS

It surrounds your factory property with a cordon of sturdy watchmen, ever vigilant, and with a million eyes that never close.

One Watchman Takes the Place of Twenty.

John Bjorn, Supt., The Nash Motors Co., Kenosha, Wis., writes:

"Prior to the building of Cyclone Fence around our factory we were employing twenty watchmen, while, since the fence has been built, we have been able to reduce the number to one. We also wish to advise you of our entire satisfaction with the manner in which you executed the contract for the erection of the fence."

The foregoing letter from the Nash Motors Company confirms Cyclone Fence economy. If paid $2.50 per day, the dispensing with nineteen watchmen means a saving of $17,337.50 annually.

Cyclone Property Protection Fencing is the recognized "last word" in factory security, adopted by many factory owners with uniform satisfaction.

We build Cyclone Fence in all practical heights, with swinging or sliding gates for alleys, switch tracks, driveways, etc.

Our engineers will consult with you to devise a system of protection that will meet your particular needs. Construction superintendent furnished at nominal cost.

Illustrated catalog showing various designs sent on request.

CYCLONE FENCE COMPANY

WAUKEGAN Dept. 134 ILLINOIS

CYCLONE FENCE

forms a continuous chain link, woven steel barrier around your property—non-climbable, shock resisting, enduring. Fabric of best quality steel wire specially drawn for the manufacture of this fence, heavily galvanized. Posts of heavy tubular steel—have equal resisting power on all sides against shock or strain, or the action of weather.

Turn The Sunlight Loose In Your Mill

What the new Tungsten Electric Lamps did for artificial light in the mill, Upco Porcelain Enamel does for sunlight. Your walls and ceilings covered with Upco will take the sunlight that comes in your windows, reflect and magnify it to to every corner of the mill until the whole plant is covered with Tungsten Daylight. Every operator is brightened into renewed activity, which reflects itself in increased production, not to speak of the increased health of employees because of the more sanitary surroundings.

Upco Porcelain Enamel makes use of ALL the light. It will retain its high, glossy, tile-like white surface no matter how often washed, and will positively stay white as long as any other mill white made.

Many tests have shown that Upco, applied alongside other mill whites, has proved its superiority.

Accept no substitute. See that you get UPCO QUALITY. Write for our interesting book "Light Without Power," which gives some valuable data about mill painting.

The Ullman-Philpott Co. Cleveland, Ohio

Industrial Paint and Varnish Laboratories.

MISSISSIPPI WIRE GLASS

Postex Cotton Mill, Post, Texas

is installed for Fire and Breakage Protection, Light Diffusion and Minimizing Cost of Maintenance.

Let us mail you samples and literature which will give valuable information.

MISSISSIPPI WIRE GLASS CO.

217 5th Ave.

NEW YORK.

7 W. Madison St., Chicago, Ill.

4070 N. Main St., St. Louis, Mo.

LINCOLN MOTORS

Nothing But Motors

The Lincoln Motor is good enough to occupy the entire attention of its manufacturer.

Lincoln Motor driving picking machine, under severe conditions.

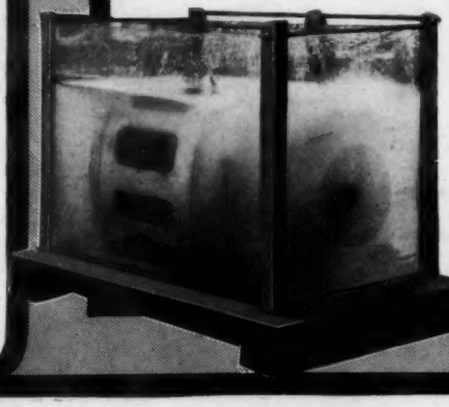
The Lincoln production department concentrates its whole energy on making this one simple piece of machinery—and making it right.

The Lincoln engineers have no "Hobby" save improving Lincoln Motors and adapting them to cotton mill machinery and special requirements.

Write For Bulletin On Motors 101-N

"Link Up With Lincoln"

The waterproof insulation of Lincoln Motors is an example of what specialization has done.



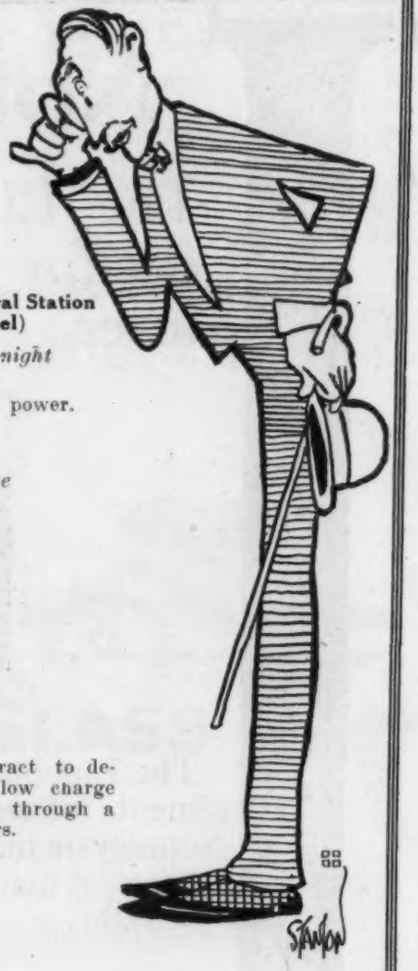
The Lincoln Electric Company

Cleveland. O.

New York City (Singer Bldg.)	Chicago	Philadelphia
Buffalo	Columbus	Pittsburg
Syracuse	Detroit	Charlotte, N. C.
	Grand Rapids	Toronto, Canada

Agencies in other principal cities.

Power Supply and Power Cost Demand Your Attention NOW



However intent you may be on other problems of your business, Mr. Manufacturer, power supply and power cost demand your attention *now*.

If you are not already receiving central station service of hydro-electric energy, these two questions loom over you with compelling import. You must solve them if you value success.

Consider These Facts—Consider Them Well:

	Isolated Steam Station Service (Coal Fuel)	**Hydro-Electric Central Station Service (No Fuel)**
POWER SUPPLY	*Uncertain* *Inelastic* Can't be expanded to serve new needs without additional heavy investment in steam plant. *Exposed to famine through—* —labor ultimata (in peace or war) as emphasized by railroad strike threatened twice recently; —congestion of distribution under exigent war demands on land transportation; —diversion of mine output to war purposes of navies (U. S. and allied) and of land and sea transportation agencies.	*Certain as day and night* *Elastic as rubber—* Just turn on more power. *Not exposed to famine*
POWER COST	*Uncertain and fluctuating* *High now because of—* —European war drain on labor supply at mines; —difficulties of distribution due to car shortage; —heavy demands by war munitions factories that **can't get** hydro-electric power; *Probably going higher because of—* —new war demands by navies (U. S. and allied); —new war demands by land transportation; —new war demands by sea transportation. *Wasteful of—* —power units that go up in smoke or otherwise are lost; —surplus power produced by whole plant operated in order to furnish partial supply for overtime or 24-hour production; —labor cost of extra shifts in boiler and engine rooms.	*Absolute* Fixed by our contract to deliver at a definite low charge per kilowatt hour through a stated term of years. *Wastes nothing* Use as little or as much as you need, as long as you need it; and pay for **only what you've actually used.**

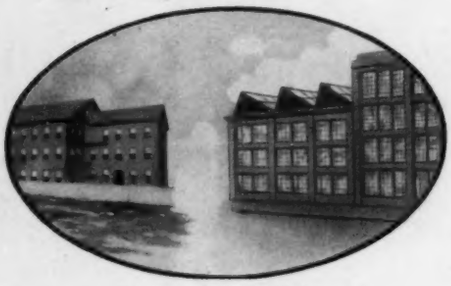
All the advantage of logic and practice rests with hydro-electric central station service.

Now is the time of all times to seize that advantage

GEORGIA RAILWAY & POWER COMPANY

Sales Dept. Atlanta

Putting The Old Mill On A Competitive Basis With The New



THE new mill with its saw tooth roof, big windows, reinforced girders and space to set the machinery crosswise presents to the old mill a big problem in production competition.

However, isn't it a fact that the sole reason for several features of this construction is to have an abundance of daylight?

The old mill is handicapped by not having this flood of daylight, but the handicap can easily be overcome for any mill can have artificial light that can be depended on to bring production up practically to daylight efficiency.

For some classes of work, good artificial light is better than daylight. For that reason it is not an uncommon thing for a piece operative to elect to work on the night shift when he is given the choice.

In this very important matter of artificial light, you can make your old mill new.

When you have done so, you'll be surprised at the very favorable comparison in cost between scientific lighting and unsatisfactory lighting.

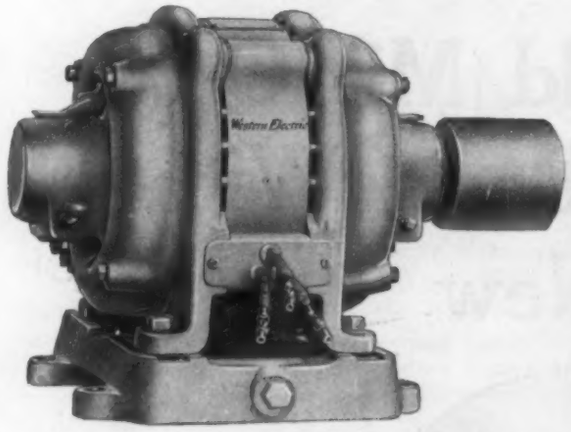
Let our mill experts investigate your lighting now. The services of our Engineering Department are at your command—free.

GUARANTEED BY THE NAME

Westinghouse Lamp Company

165 Broadway, New York.

Sales Offices at Warehouses Throughout the Country.



A Western Electric single, two or three phase induction motor, this type from 1-4 to 5 h.p. All commercial voltages

Information on Power Apparatus

We have just issued new concise bulletin leaflets on motors for direct or alternating current. The motors are suitable for all power requirements and especially of interest to cotton manufacturers.

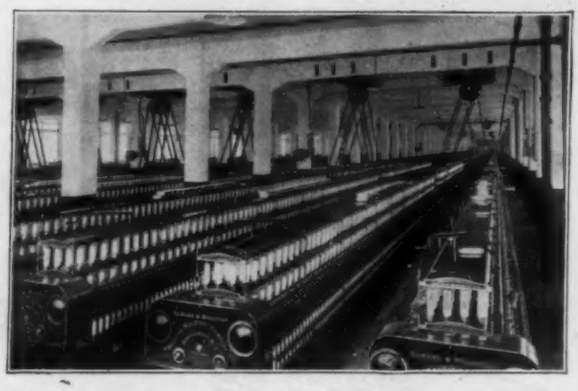
Write our nearest house for literature on the class of motor service you are interested in.

Western Electric Company
INCORPORATED

New York	Atlanta	Chicago	Kansas City	San Francisco
Buffalo	Richmond	Milwaukee	St. Louis	Oakland
Newark	Savannah	Indianapolis	Dallas	Los Angeles
Philadelphia	New Orleans	Detroit	Houston	Seattle
Boston	Birmingham	Cleveland	Oklahoma City	Portland

Pittsburgh Cincinnati Minneapolis St. Paul Omaha Denver Salt Lake City

EQUIPMENT FOR EVERY ELECTRICAL NEED
Member Society for Electrical Development. "Do it Electrically"



Allis-Chalmers
Textile Motors

Rugged in Construction
Reliable in Operation
They meet every requirement
For Group or Individual Drive

Allis-Chalmers Manufacturing Company
Milwaukee, Wisconsin

Offices in All Principal Cities
For all Canadian Business refer to Canadian Allis Chalmers, Ltd.
TORONTO, ONTARIO

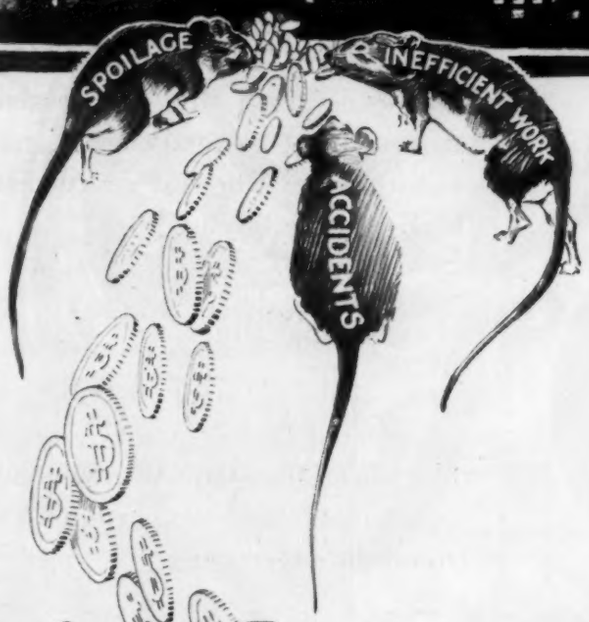
The Heart of an
ECONOMY
renewable cartridge
FUSE

is the "Drop Out" Renewal Link. It is the only thing you have to replace in order to renew a blown ECONOMY FUSE. The expense is trifling, compared to the utter extravagance of discarding an entire fuse after it has operated.

Use Economy Fuses in your plant and by their use cut yearly fuse maintenance bills a full 80 per cent.

Write for free Samples. Test them. Let the results speak for the economy and safety of Economy Fuses. Be sure to ask for Catalog 30.

Economy Fuse & Mfg. Co.
Kinzie and Orleans Sts.,
CHICAGO.
At Leading Jobbers.



STOP IT

Proper light makes cheerful, alert, accurate workers.

Poor light (day or night) makes labor listless, bungling and expensive.

Poor light means leaks — real money leaks that can be measured by the cost of slow and faulty production, by the cost of avoidable mistakes and accidents.

You can stop these leaks with Edison MAZDA Lamps, properly applied.

Edison MAZDA B Lamps (10 to 60 Watts) give three times the light of the old style carbon lamp, with no increase in the current consumed.

Edison MAZDA C Lamps in the larger sizes have from six to eight times the efficiency of the old carbons.

Both types of MAZDA Lamps have their place in every factory. Have they found their place in yours?

EDISON LAMP WORKS
of General Electric Company
General Office, Harrison, N. J. Agencies Everywhere

EDISON MAZDA

6027

Without Prejudice

The Literary Digest gives the important news of human activities in concentrated form and with authority.

The Digest has no bias, not even the unconscious bias that develops from an editorial policy based on opinion.

The Digest gives the news at home and abroad without prejudice.

Digest subscribers have the intelligence, the judgment which makes them realize the necessity for exact knowledge.

They want the definite facts from which they can make their own deductions.

This is why The Digest is read by busy executives, by progressive business men, by financiers, bankers,—the men who buy or furnish the money for buying.

For them The Digest is the **necessary** magazine.

The wide national distribution, the selected Digest quality circulation, the care and spirit in which it is read make clear the power of The Digest in advertising.

There are figures which show that, in what has commonly been called the technical field, The Digest proves that it reaches busy executives, that it opens new markets as well as convincing old ones.

IMMEDIATE National Publicity

The Literary Digest

New York

Building Bigger Business by Better Methods

75% of all electric power used in the textile mills of this country passes through G-E Motors

WHEN you cut down manufacturing costs—up go your profits. When you increase your production—when you increase the quality of your products — when you decrease spoilage—*up go your profits.*

When you make it easier for an employee to produce more, you make it easier for him to *earn* more; and you find it easier to get the *better kind* of help and much easier to *keep* them. *And up go your profits.*

When you cut down your power costs, when you cut down maintenance of plant—when you reduce overhead supervision—wnen you lessen breakage of machinery—when you reduce stoppage of machinery—these mean *more profits.*

These advantages and a greatly increased capacity for service to your customers come to plants equipped with G-E Motor Drive.

We will gladly send a member of our Engineering Organization who will study the requirements and conditions of your plant, and tell you how, where and why G-E Motor Drive will give you manufacturing advantages.

G-E Motor Drive

GENERAL ELECTRIC COMPANY

General Office, Schenectady N.Y. Mill Power Dept. Boston, Mass.

7028

FELCO

Quality Brushes

MILLS that recognize quality in brushes—brushes that are made from the best materials and by the most expert workmen—brushes that are made to stand the use and abuse of long and severe service—are demanding Felton Mill Brushes.

There's a Felton Brush for every use in the mill at the lowest price consistent with the high standard of quality.

We have a special department for brush repair work, and your broken or worn out brushes will be repaired carefully and promptly.

S. A. FELTON & SON CO.
Manchester, N. H.

D. D. FELTON BRUSH CO.
Atlanta, Ga.

Felco Curved Floor Sweep
For Spinning Room Alleys.

SIMPLICITY

An excellent and unique hand threader in a reliable shuttle.

Straight or curved saw cut.

Write for sample set of threader eyes.

SHAMBOW SHUTTLE CO.
Woonsocket, R. I

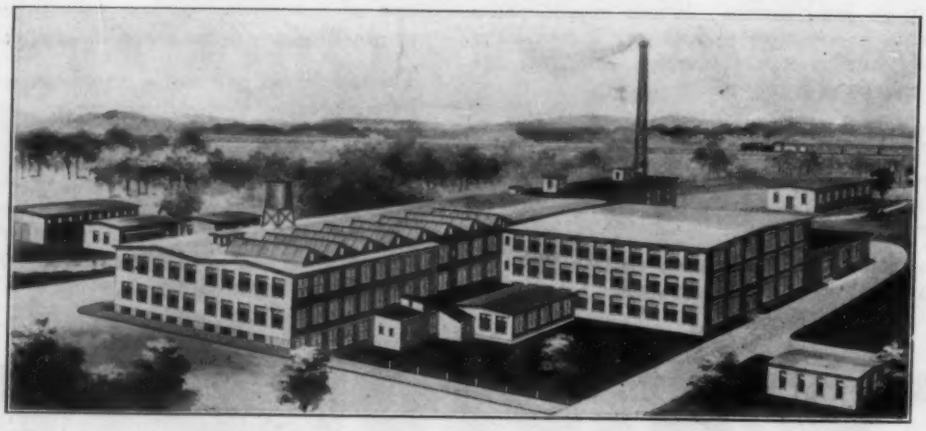
P. B. McMANUS, Pres. and Treas. E. J. McCAUGHEY, Secy. and Mgr.

Home Bleach & Dye Works, Inc.

Established 1881.

Dyers, Bleachers and Mercerizers of Cotton Yarns—in Skein and Warp

Daily Capacity 50,000 Lbs.



PUT YOUR PROCESSING IN OUR HANDS if you want to be sure of results. We have had 35 years of experience in Dyeing, Bleaching or Mercerizing and have every modern equipment operated by skilled employees.
Pure Bleaching for Piece Dye Work. Fancy Colors Dyed to Match Samples. Special Finish. Special Dyeing of Cotton Yarns for Silk Goods in Black and Colors.
Also—Facilities for Winding Cotton Yarns on Paper Cop Tubes for the Shuttle, also on Beams and Cones and Parallel Tubes.

Office and Works at Pawtucket R. I.

COTTON

Published Monthly by

W. R. C. Smith Publishing Co., Dalton and Atlanta, Ga.

L. L. ARNOLD, Editor.

Editorial and Advertising Departments, Grant Building, Atlanta, Ga. Subscription price, $1.00 for two years; Canada, $1.00 a year; Foreign, $1.50 a year. Entered at the Dalton, Ga., postoffice as second-class matter.

Contributions to the columns of Cotton are solicited and paid for after publication. The names of contributors need not necessarily be used, but must accompany all manuscripts.

Orders for any change in advertising must reach Atlanta previous to the tenth of the month preceding month of issue, otherwise publishers cannot be responsible for changes.

When changing address, *notify us*, not the postmaster. Always give the old address as well as the new one.

Copyright, 1917. W. R. C. Smith Publishing Co.

Volume 81. **Member Audit Bureau of Circulation.** **Number 7**

This Issue, 5,200 Copies.

PROOF THAT ADVERTISING LOWERS SELLING COST.

The rising cost of living is the great universal hardship of the present day. So great and so many have these rises been that few people stop to realize that there have been any exceptions to the general rule. But the fact is that there have been numerous exceptions and all of these exceptions belong to the same great class—that of nationally advertised goods.

The old idea that the cost of advertising raises prices dies hard. But the business man knows better. He knows that selling goods is costly business — no matter what the selling methods. And he knows that anything which creates demand on a large scale, and thus makes selling easier, is bound to reduce selling costs and thus helps to reduce prices.

But evidence is better than argument; facts are better than theories. The Association of National Advertisers, an organization of 260 of the leading advertisers of the country, has been at great pains to collect the facts. It has secured an immense body of data from its members which proves that advertising does reduce selling costs and thus tends to reduce the selling price of advertised goods. "The proof of the pudding" is the argument that settles everything.

To present all the evidence, instance by instance, is impossible within these limits. A few representative cases will suffice.

The makers of a famous photographic camera, when they began advertising twenty-eight years ago, made one camera which took a 2½ inch picture and which sold at $25. Today they make a far better camera which sells for $10. Another, which took a 4 x 5 picture, sold for $60. Today they sell a far better one for $20. And so on through the line.

A prominent hat manufacturer has, by means of advertising, reduced his selling cost seven cents per hat. Result—the buyer gets a hat of better quality at no increase in price; this despite increased cost of raw material and workmanship.

When the manufacturer of a famous breakfast food specialty began advertising, his goods sold at 15 cents a package. Today the package is 50 per cent larger and the price has been reduced to 10 cents. Again advertising did it, the same causes producing the same results.

The producer of another well known food specialty is selling his goods at 25 per cent less to the wholesale grocery trade than four years ago.

Twenty years ago a nationally advertised shaving stick was sold in a cheap metal leatherette covered box. Today a stick containing 20 per cent more soap is sold in a handsome nickel box at the same price.

Then take the most conspicuous example of them all—the automobile business; and compare the $5,000, or $10,000 cars of ten years ago with the equally good cars of today, selling for a fraction of the money.

And so on through a long list. In every case, the manufacturer either has been able to lower the price or improve the quality at no increase in price.

How has he done it? By means of advertising, which has created demand on a larger scale and thus permitted production and distribution on a large scale. Result—improved manufacturing efficiency and reduced selling costs. And all of this in the face of a steady increase in the cost of labor and raw materials which, with advertising eliminated, might in many cases have fairly doubled the price of the goods.

"A triumph of economical marketing" is the only possible verdict for advertising in the face of these facts.

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BOILER SCALE Never Was NEUTRAL

It is always on the offensive, coating the shells and tubes of the boiler and greatly lowering the boiler's steaming efficiency.

Dixon's "Pioneer" Boiler Graphite

is flake graphite. Flake Graphite is the "sapper" that undermines and penetrates the scale at the time of its formation.

Dixon's Pioneer Boiler Graphite attacks scale on all sides, rendering it easy to remove when a cleaning tool is used in the ordinary way.

One engineer effected a saving in cleaning cost of 28¾c on each boiler tube by using "Dixon's Pioneer" method. Why don't you?

Send for booklet 34-T.

Made in Jersey City by the

JOSEPH DIXON CRUCIBLE CO.

Established 1827

DRAWINGS OF YOUR PLANT

This is a Photo of Our Drawing of the Springstein Mills, Chester, S.C.

WE CAN MAKE A PICTURE LIKE THIS FROM THE ARCHITECTS BLUE PRINTS BEFORE PLANT IS ERECTED

RUDOLPH J. SHUTTING CO. CHATTANOOGA TENN.

SUCCESSFUL SOUTHERN BOBBIN MAKERS

JORDAN MFG. CO., Monticello, Ga.

"An Ounce of Prevention Is Worth a Pound of Cure"

CLINTON CAM COMPANY

CLINTON, S. C.

Our Cam Device Reduces Shock and Prevents Breakage of Various Parts of the Loom.

Just A Hint— Read It!

Rawhide loom pickers are more durable and run better on the spindle when soaked in oil, but they should be thoroughly seasoned before soaking. Sperm oil is the best for this purpose, the next best being a mixture of sperm and neats foot oils. The longer the pickers are soaked and the longer they dry after being soaked, the better. We carry a large stock of standard pickers which are thoroughly seasoned and ready to put in oil when received.

Our trade mark is on every picker.

GARLAND MFG. CO.
SACO, MAINE

TRADE MARK

MAY 12 1917

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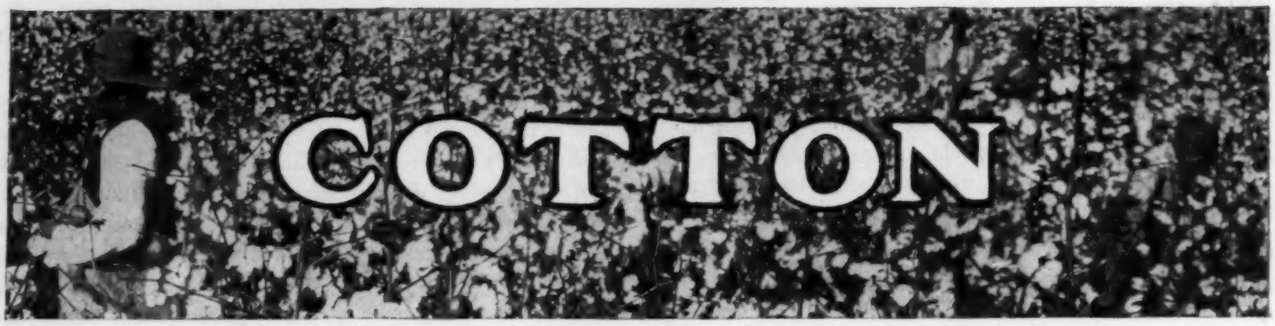


May, Nineteen-Seventeen.

Group Insurance.

One of the insurance features which is being rapidly developed in the textile field, and which is worthy of cordial endorsement, is the group insurance plan.

Broadly speaking, cotton mill managers are under obligations to their stockholders to conduct the business prudently that solvency may be maintained and reasonable profits earned; to the public, which is entitled to honest goods at prices as reasonable as conditions will permit; and to the employees, that they may have the reasonable comforts of life and be thereby encouraged to make an honest contribution of intelligent labor to the common interest.

None of these obligations can be evaded by the managers and all must be lived up to if the business is to succeed.

Naturally there is a limit to the wages which can be paid, but of late years the wiser men are learning that it is not altogether a matter of wages, although that is most important. The wiser men are seeing that many things can be done to add to the comfort and contentment of their employees which produce better results, than as if the cost of these things was added to the wages. And there is a reason. The mill can do things in a large and wholesale way much cheaper than the individual worker can do it in the small or retail way.

This group insurance is an illustration. The wage earner's margin for saving is often very small. A death in the family may put the whole family to the bad for a year or two. The mill manager comes into play and says we have insured every employee's life for so much money, payable to the beneficiary named by each employee. This is done at the expense of the mill. Each year the amount will be increased at a fixed ratio until the maximum is reached at the end of a given term of years. This helps to anchor the employee to the mill, and as very few people are totally lacking in a sense of reciprocity, the employees will reason that a mill which is trying to take care of their interests is a good mill to tie to.

Reason as we may about this being a mechanical age, about machinery taking the place of men and women, about efficiency and production, the fact remains that we have not and never will reach the point, where man power will cease to be the vital factor, and this being true the really progressive mill men are those who are willing to spend the money and take the trouble to conserve that man power, which is a thinking power, and by thoughtful consideration make that thinking power realize that the men for whom, and with whom, the work is done are taking into account their welfare as one of the obligations of the business. Is not such a policy then an exhibition both of humanity and good business sense?

The Need of Information.

As a whole the American people are well informed in a general way. Let us emphasize that—in a general way. But when it comes down to specific information it is both amazing and discouraging to find that the great mass of our countrymen are but ill-informed outside their own special business or interest, and even in their own special fields we find many who are not informed on matters that they should know.

This fact was strongly emphasized recently when in our mail was a letter of inquiry which assumed that the majority of the cotton mill operatives of the South were colored people, and wanted to know what other races or nationalities were represented.

The writer of that letter occupies a prominent place in his chosen pursuit, his position is such that he should have known that not more than 3 per cent of the cotton mill employees of the South are colored, and of the remainder not one per cent are anything but straight American. In the state of Georgia, only one little knitting mill, which is a branch of a northern concern, is operating with colored help.

In fact, the mill operatives of the South today are what the mill operatives of New England were 50 years ago, pure American and white.

In passing it may be said that the change in New England from American to a polyglot of many nationalities has not proved a source of unmitigated pleasure to the mill owners.

With that fact before them, southern mill owners will do well to take heed of northern conditions, and to so manage their affairs that they will not be confronted with the foreign problem in their mills.

In this day there is absolutely no excuse for any man to lack information which may by any possibility be of value to him in his business, or in the relations of his business to the general business of the country. To so lack is an indication of mental laziness which is likely to breed disaster.

A great philosopher once said: "Everything which concerns my fellow man is of interest and value to me." So, in business, nothing that bears even remotely, directly or indirectly, upon business conditions generally, or upon the special business in which one may be engaged is without

value. Therefore, the man who would be first, the man who wants the best mill, the most contented employees, the most satisfactory output, will be an eager seeker after information, and if he is wise, he will never turn a deaf ear to any man however humble, nor cast a non-seeing eye over the printed word, for in the most unlikely places one is likely to find an idea capable of development into great things. No man however wise knows the last word about anything, even in his own business, and the wiser the man, the more eager he is to add to his stock of information.

Our Trade With Japan.

Trade of the United States with Japan practically doubled in 1916. A compilation by the Foreign Trade Department of the National City Bank of New York shows an increase of 138 per cent in the exports to Japan in the calendar year 1916, and an increase of 73 per cent in the imports from that country. The total value of the trade of the United States and Japan in 1916 was $291,000,000 against $154,000,000 in 1913, the former high record year.

In fact, the trade with all Asia shows very large gains in 1916, the exports to all that continent (except the $166,000,000 sent to Asiatic Russia for transfer thence to Russia in Europe) was $721,000,000 in 1916 against 411,000,000 in 1915 and $365,000,000 in 1914, and the imports from Asia, $517,000,000 against $306,000,000 in 1915. The greatest growth, however, in our Asiatic trade has been with Japan, to which the exports of 1916 were $109,000,000 against $46,000,000 in 1915, and $42,000,000 in 1914. The imports from Japan in 1916 were $182,000,000 against $108,000,000 in 1915, and $106,000,000 in 1914.

Manufacturing material forms by far the largest part of the exchanges between the two countries. Raw cotton formed, in fact, nearly one-half of our exports to Japan while raw silk formed nearly two-thirds of our imports from that country. In fact, the United States took a very large proportion of Japan's available silk in 1916, her official figures showing that of her total raw silk exports amounting to $120,000,000 in the 11 months ending with November, 1916, no less than $100,000,000 worth were sent to the United States.

Japan's exports of cotton manufactures show rapid increases, having been $76,000,000 in the 11 months of 1916 against $54,000,000 in the same months of 1915 and $57,000,000 in the corresponding months of 1914. About 60 per cent of the exports of cotton manufactures go to China, to which our own exports of cotton cloths in 1916 fell to less than $200,000 against $8,013,194 in 1913. About 25 per cent of the raw cotton used by Japan in her manufactures is drawn from the United States, the remainder chiefly from India.

The Textile Conference.

The date for the opening of the Second Annual Technical Textile Conference at the Bureau of Standards in Washington, D. C., has been changed from April 26th to May 21st so as not to conflict with the meeting of the National Association of Cotton Manufacturers which was being held in Boston on the earlier date mentioned. A number of interesting papers have already been submitted, and others will doubtless be forthcoming before the meeting is held.

The President's Proclamation.

The White House, April 15, 1917.

My Fellow-Countrymen:

The entrance of our own beloved country into the grim and terrible war for democracy and human rights which has shaken the world creates so many problems of national life and action which call for immediate consideration and settlement that I hope you will permit me to address to you a few words of earnest counsel and appeal with regard to them.

We are rapidly putting our navy upon an effective war footing and are about to create and equip a great army, but these are the simplest parts of the great task to which we have addressed ourselves. There is not a single selfish element, so far as I can see, in the cause we are fighting for. We are fighting for what we believe and wish to be the rights of mankind and for the future peace and security of the world. To do this great thing worthily and successfully we must devote ourselves to the service without regard to profit or material advantage and with an energy and intelligence that will rise to the level of the enterprise itself. We must realize to the full how great the task is and how many things, how many kinds and elements of capacity and service and self-sacrifice it involves.

These, then, are the things we must do, and do well, besides fighting—the things without which mere fighting would be fruitless:

We must supply abundant food for ourselves and for our armies and our seamen, not only, but also for a large part of the nations with whom we have now made common cause, in whose support and by whose sides we shall be fighting.

We must supply ships by the hundreds out of our shipyards to carry to the other side of the sea, submarines or no submarines, what will every day be needed there, and abundant materials out of our fields and our mines and our factories with which not only to clothe and equip our own forces on land and sea, but also to clothe and support our people, for whom the gallant fellows under arms can no longer work; to help clothe and equip the armies with which we are co-operating in Europe, and to keep the looms and manufactories there in raw material; coal to keep the fires going in ships at sea and in the furnaces of hundreds of factories across the sea; steel out of which to make arms and ammunition both here and there; rails for wornout railways back of the fighting fronts; locomotives and rolling stock to take the place of those every day going to pieces; mules, horses, cattle for labor and for military service; everything with which the people of England and France and Italy and Russia have usually supplied themselves, but cannot now afford the men, the materials, or the machinery to make.

It is evident to every thinking man that our industries, on the farms, in the shipyards, in the mines, in the factories, must be made more prolific and more efficient than ever, and that they must be more economically managed and better adapted to the particular requirements of our task than they have been; and what I want to say is that the men and the women who devote their thought and their energy to these things will be serving the country and conducting the fight for peace and freedom just as truly and just as effectively as the men on the battlefield or in

the trenches. The industrial forces of the country, men and women alike, will be a great national, a great international service army—a notable and honored host engaged in the service of the nation and the world, the efficient friends and saviors of free men everywhere. Thousands, nay, hundreds of thousands, of men otherwise liable to military service will of right and of necessity be excused from that service and assigned to the fundamental, sustaining work of the fields and factories and mines, and they will be as much part of the great patriotic forces of the nation as the men under fire.

I take the liberty, therefore, of addressing this word to the farmers of the country and to all who work on the farms: The supreme need of our own nation and of the nations with which we are co-operating is an abundance of supplies, and especially of foodstuffs. The importance of an adequate food supply, especially for the present year, is superlative. Without abundant food, alike for the armies and the peoples now at war, the whole great enterprise upon which we have embarked will break down and fail. The world's food reserves are low. Not only during the present emergency, but for some time after peace shall have come, both our own people and a large proportion of the people of Europe must rely upon the harvests in America.

Upon the farmers of this country, therefore, in large measure rests the fate of the war and the fate of the nations. May the nation not count upon them to omit no step that will increase the production of their land or that will bring about the most effectual co-operation in the sale and distribution of their products? The time is short. It is of the most imperative importance that everything possible be done, and done immediately, to make sure of large harvests. I call upon young men and old alike and upon the able-bodied boys of the land to accept and act upon this duty—to turn in hosts to the farms and make certain that no pains and no labor is lacking in this great matter.

I particularly appeal to the farmers of the South to plant abundant foodstuffs, as well as cotton. They can show their patriotism in no better or more convincing way than by resisting the great temptation of the present price of cotton and helping, helping upon a great scale, to feed the nation and the peoples everywhere who are fighting for their liberties and for our own. The variety of their crops will be the visible measure of their comprehension of their national duty.

The Government of the United States and the Governments of the several States stand ready to co-operate. They will do everything possible to assist farmers in securing an adequate supply of seed, an adequate force of laborers when they are most needed, at harvest time, and the means of expediting shipments of fertilizers and farm machinery, as well as of the crops themselves when harvested. The course of trade shall be as unhampered as it is possible to make it, and there shall be no unwarranted manipulation of the nation's food supply by those who handle it on its way to the consumer. This is our opportunity to demonstrate the efficiency of a great democracy, and we shall not fall short of it!

This let me say to the middlemen of every sort, whether they are handling our foodstuffs or our raw materials of manufacture or the products of our mills and factories: The eyes of the country will be especially upon you. This is your opportunity for signal service, efficient and disinterested. The country expects you, as it expects all others, to forego unusual profits, to organize and expedite shipments of supplies of every kind, but especially of food, with an eye to the service you are rendering and in the spirit of those who enlist in the ranks, for their people, not for themselves. I shall confidently expect you to deserve and win the confidence of people of every sort and station.

To the men who run the railways of the country, whether they be managers or operative employees, let me say that the railways are the arteries of the nation's life and that upon them rests the immense responsibility of seeing to it that those arteries suffer no obstruction of any kind, no inefficiency or slackened power. To the merchant let me suggest the motto, "Small profits and quick service," and to the shipbuilder the thought that the life of the war depends upon him. The food and the war supplies must be carried across the seas, no matter how many ships are sent to the bottom. The places of those that go down must be supplied, and supplied at once. To the miner let me say that he stands where the farmer does: the work of the world waits on him. If he slackens or fails, armies and statesmen are helpless. He also is enlisted in the great Service Army. The manufacturer does not need to be told. I hope, that the nation looks to him to speed and perfect every process; and I want only to remind his employees that their service is absolutely indispensable and is counted on by every man who loves the country and its liberties.

Let me suggest, also, that every one who creates or cultivates a garden helps, and helps greatly, to solve the problem of the feeding of the nations; and that every housewife who practices strict economy puts herself in the ranks of those who serve the nation. This is the time for America to correct her unpardonable fault of wastefulness and extravagance. Let every man and every woman assume the duty of careful, provident use and expenditure as a public duty, as a dictate of patriotism which no one can now expect ever to be excused or forgiven for ignoring.

In the hope that this statement of the needs of the nation and of the world in this hour of supreme crisis may stimulate those to whom it comes and remind all who need reminder of the solemn duties of a time such as the world has never seen before, I beg that all editors and publishers everywhere will give as prominent publication and as wide circulation as possible to this appeal. I venture to suggest, also, to all advertising agencies that they would perhaps render a very substantial and timely service to the country if they would give it widespread repetition. And I hope that clergymen will not think the theme of it an unworthy or inappropriate subject of comment and homily from their pulpits.

The supreme test of the nation has come. We must all speak, act, and serve together!

WOODROW WILSON.

"The clear duty of the Nation is to guarantee the farmers a fair price for their crops when grown, and a reasonable supply of labor at harvest. The clear duty of the farmer is to raise food enough to win this war for democrary against Kaiserism.

"No such responsibility has ever rested on any class of men since the world began as rests today on the farmers of America."—*Gifford Pinchot.*

The Monroe Can Take a Man's Part.

The supreme test of the nation has come. We must all speak, act and serve together.

The manufacturer does not need to be told, I hope, that the nation looks to him to speed and perfect every process and I want only to remind his employees that their service is absolutely indispensable and is counted on by every man who loves the country and its liberties.

From President Wilson's Proclamation, April 15th, 1917.

The Monroe calculating-adding machine has already enlisted in the President's "great service army" and is prepared to take the place of the office man called to shoulder a gun in defense of liberty and democracy.

The diversification of the figure work of the average textile mill, the necessity of absolute accuracy and the time

limit put upon certain problems has made the employment of mechanical means to insure maximum efficiency an economical measure.

The Monroe is particularly adapted to textile accounting and handles with great facility each of the various mathematical problems found in this class of work. For instance:

Suppose, when invoicing, you had this problem: 13,423 yards at 5⅛ = $687.93. Could you find the result—and know it was correct—in 5 or 6 seconds?

Suppose, when figuring discounts, you had this problem:

$687.97 less 5 and 2 per cent=....	$640.50
Less 3731 lbs., at .41 per 100 lbs...	15.30
	$625.20

Could you find all amounts—and be sure you were correct—in 10 or 12 seconds?

Suppose, when figuring interest, you met these problems: $5000.00 for 121 days 4¾% = $79.82. $5000.00 for 211 days 4¾% = $139.20. Could you get the results of both items in 5 or 6 seconds?

Suppose, in payroll work, you had items like these:

	Less	Balance
141 "cuts" at 13½c = $19.03	1.15	$17.88
152 "cuts" at 13½c = 20.52	4.29	16.23
134 "cuts" at 13½c = 18.09	2.37	15.72

Could you find all these results in 20 to 25 seconds and be so sure of accuracy that you would not have to check back?

In compiling cost statistics, suppose you had this problem: Monthly production 185,692 pounds. Find cost per pound for each department to 8 decimal places.

Carding	$1385.29	.00746015
Spinning	2033.18	.01094921
Weaving	2517.02	.01355481
Spooling	444.53	.00239391
Cloth Room	303.75	.00163577
Slash. and T. I.	268.03	.00144341
Eng. and Boiler	531.92	.00286453
	$7483.72	.04030179

Could you get the proper amounts for all items in approximately 2 minutes, and be sure?

These are examples of the every-day service being given by the Monroe. The simplicity of operation, speed, and flexibility in changing from one process to another, a "no repair bill" record and a low first cost combined with a five year guarantee furnish ample reason for the Monroe advance upon the textile industries of the country.

The testimony of Monroe users is proof of the particular adaptability of this little machine to the figure needs of the textile mill. We are quoting in part from some of them:

THE NEWTON COTTON MILLS,
Newton, N. C., July 7, 1916.

"We purchased this machine after giving a thorough trial to it and several other makes, and decided that the Monroe was much better adapted to our work than any other machine we have tried. It is always a pleasure to speak a word of praise for this wonderful machine."

W. S. GRAY COTTON MILLS.
Woodruff, S. C., August 20, 1915.

"An almost indispensable aid to the office. In the matter of figuring payrolls, costs at the end of the month, in figuring discounts from invoices, and in fact everywhere addition, subtraction, division and multiplication are required, the work is so readily and accurately despatched as to require only one-third of the time to dispose of as formerly."

VICTORIA COTTON MILLS,
Rock Hills, S. C., March 27, 1916.

"Of great benefit as a time saver and in the elimination of errors on all accounting work. We use the machine for practically every calculation and feel that it meets our requirements to the fullest extent.

"I am glad to recommend the Monroe as the most satisfactory machine for a cotton mill office."

WOODRUFF COTTON MILLS,
Woodruff, S. C., July 14 1915.

"We are very much pleased with the Monroe Calculating Machine and the more we use it the better we like it. It certainly is a great time saver when it comes to figuring out the Payrolls, Sales Sheets and Cost Sheets. I think it is the best machine for a mill office that I have ever seen."

The Monroe is manufactured in the company's own plant at Orange, New Jersey. General offices are maintained in the Woolworth Building, New York, and branch offices in the principal cities of the United States.

Ulus A. Morton, E. Herbert Bailey and Manfred Barber have formed a copartnership for the practice of accounting, under the firm name of Morton, Bailey & Co., certified public accountants, with offices in the Hurt Building, Atlanta, Ga.

They will maintain a staff of experienced accountants, each of whom has been thoroughly trained in a particular line to which he will devote his special attention.

Mr. Morton has had about ten years' practical experience as an accountant, receiving his degree from the state in May, 1915. He is an experienced auditor and a specialist in oil mill and fire insurance accounting.

Mr. Bailey was for five years assistant cashier of a national bank in this state. He resigned that position several years ago to take up the accounting practice, since which time he has conducted various audits for cotton mills, oil mills, lumber mills, counties, cities, banks, wholesale and retail houses and many other concerns in the southeast. He received his degree in May, 1916.

Mr. Barber has devoted his entire time for the past fifteen years as general auditor for several large corporations, including wholesale houses and railroads. He has had considerable experience in the larger banks of the east. His degree was granted by the state in May, 1915.

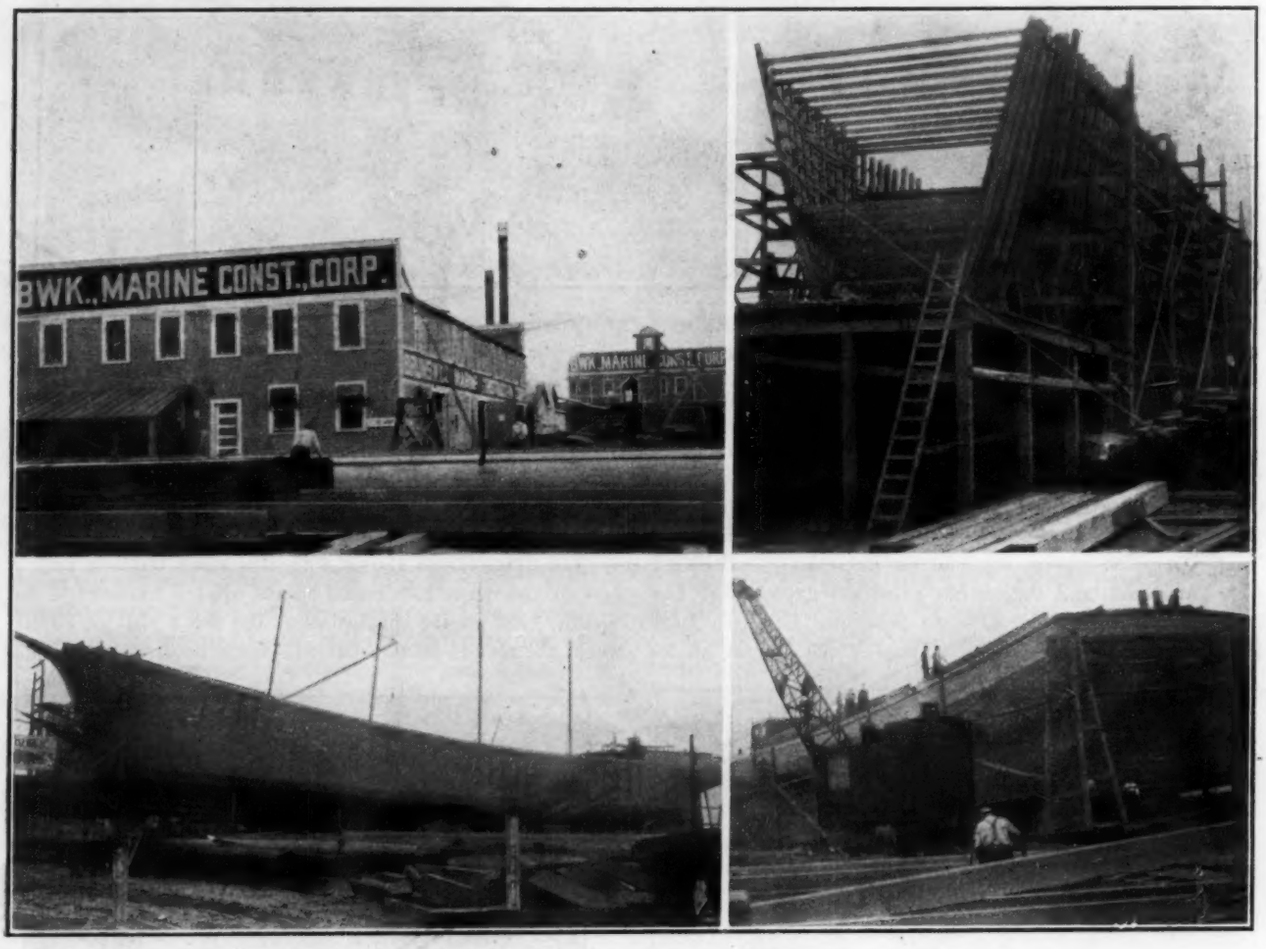
Where the Georgia Cotton Men Will Meet

The arrangements for the Annual Convention of the Cotton Manufacturers' Association of Georgia, which is to be held at St. Simons Island, near Brunswick, Ga., on June 8th and 9th, are rapidly approaching completion. It has been definitely settled that the New St. Simons Hotel will be the headquarters of the convention during their stay at the Island, and it is believed that this commodious hostelry with its widespreading verandas and adjacent dance-hall and bath houses, will go a long way toward making this convention the most enjoyable outing that the cotton manufacturers' association has had in many years.

The program committee have not as yet announced the entire list of speakers, but it is stated definitely that Senator Thomas W. Hardwick will make the principal address of the occasion. It is also their intention to provide a speaker to talk upon group insurance and pension systems, and another speaker to discuss village garden demonstration work and other features pertaining to health service. Still another speaker already listed for the program is Mrs. Nellie Peters Black, of Atlanta, who will discuss co-ordination between the mill management and the women's clubs of the state of Georgia. In addition to this will be the president's address, and the usual address of welcome, committee reports, election of officers, etc.

Up to the present, the committee on arrangements have not given out the full line of entertainment features, but tentatively, it is proposed to have the first business session of the convention called to order on Friday afternoon, June 8th, and the second business session sometime after dinner Friday night. It is believed that the entire business of the meeting can be transacted at these two sessions, leaving Saturday entirely free for entertainment purposes.

On Saturday it is proposed to leave St. Simons Island on a special steamer which will make brief stops at Cumberland Island, Fernandina, Fla., and Jekyl Island, where the members of the association will become the guests of one of the members, and an opportunity will be had to view the magnificent estates for which this island is famous. Leaving Jekyl Island, the boat will continue on into the city of Brunswick, where arrangements will be made to serve the party with a suitable luncheon, probably at the Oglethorpe Hotel.



BRUNSWICK SHIP-BUILDING SCENES.

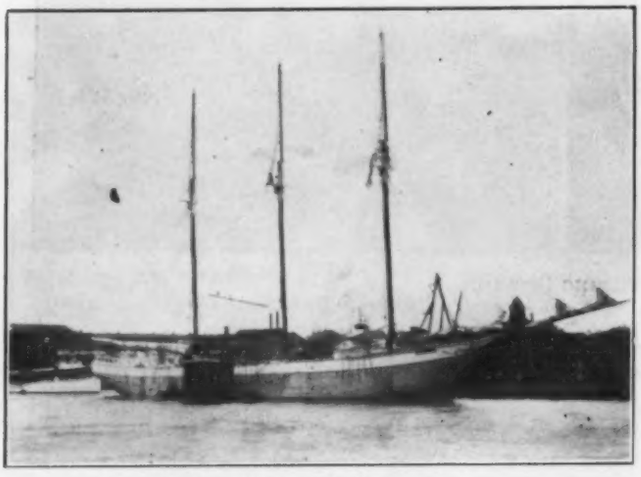
It is not known at time of writing just what arrangements the Board of Trade of Brunswick are making for the entertainment of the association members, but it is understood that from the time the members land in Brunswick they are the guests of the Board of Trade, under the active management of Albert M. Smith, its live-wire secre-

AT THE LEFT, ST. SIMONS ISLAND LIGHT. TOP RIGHT, THE QUARANTINE STATION. BOTTOM RIGHT, THE NEW ST. SIMONS HOTEL, WHICH IS ASSOCIATION HEADQUARTERS.

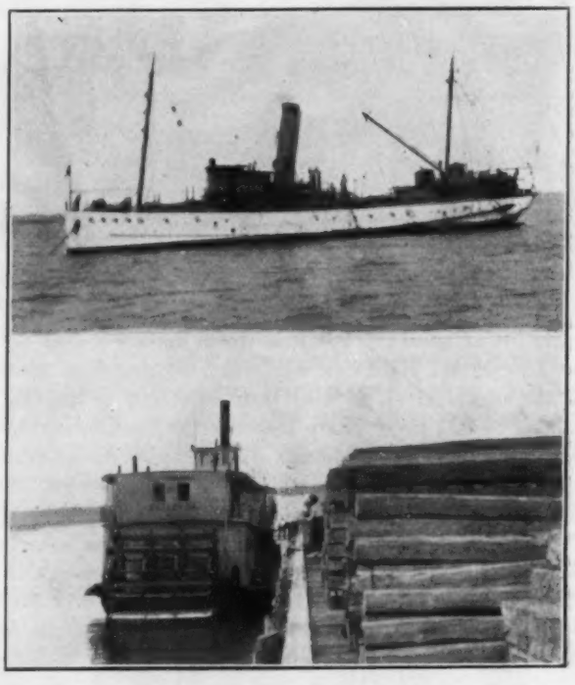
tary. Following the luncheon it is tentatively proposed to escort the party through some of Brunswick's ship yards, where the ship building, similar to that shown in the illustration, is being carried on. From the ship-building plant the party will go to the large plant of the Yaryan Rosin & Turpentine Co., where they will see immense quantities of pine oil, rosin and turpentine extracted from what has heretofore been considered waste product. This is a most interesting plant, besides being one of the largest of its kind in the world. Another feature about the Yaryan plant is that on its premises is located the largest flowing artesian well in the United States.

Besides the Brunswick Marine Construction Corporation, the Carpenter Watkins Co. (who are also ship builders), and the Yaryan plant to which we have already referred, there are many other features of interest to be seen in and around Bruswick. The plant of the Georgia Veneer and Package Company and the Brunswick Ladder Co., contain many features of interest, as does the several canning factories that are located in that city, as well as the large terminals of the A. B. & A. and the Southern railways.

The illustrations shown with this story indicate only a few of the many interesting scenes around Brunswick and vicinity, and at the conclusion of the day's visit in Brunswick, the special steam boat will again be brought into use



BUILT IN BRUNSWICK.



VIEWS IN BRUNSWICK HARBOR

to convey the members and their guests back to St. Simons Island and the hotel.

It is rumored that arrangements are being made for an informal dance to be held on Saturday night in the dancing pavilion at the hotel. It is also being whispered that several small boats have been arranged for, whereby the followers of Isaac Walton may exercise their penchant in the waters around the island, which teem with fish of several varieties.

Arrangements are being made by many members to take their wives with them on this convention trip, and a large number of these will stay over Sunday at the Island, leaving on the Sunday night train for home. In this connection, it may also be of interest to mention that special equipment is being provided by the railroads in order to make this trip as comfortable as possible for its participants.

Invitations to non-members will be by card.

Training Community Agents.

Twenty-three young women gathered at Winthrop College, Rock Hill, S. C., for the short course in Social Service held there the last of February. Twelve of these were from the group of fifteen who are working directly under Mary E. Frayser, State Agent for mill community work in South Carolina in nineteen mills. The others consisted of women under appointment, some who are thinking of taking up mill village work, and women who are working independently under their own mill management, who were attracted by the Social Service offerings.

The work of community betterment in mill villages begun by Minnie Macfeat and fostered by Winthrop College has passed the experimental stage. It was at first done in connection with the rural work, but now heads up under Miss Frayser as a separate undertaking, Winthrop College being in cooperation with Clemson College and the United States Government. Some of the mills in South Carolina have an idea that work for the betterment of their employees can best be handled by the mill management; they seem to think it takes something away from the mill authority if it is not. But the necessity of having one guiding person who is not only trained for this special work, but who is in touch with all the community workers, to whom they can go for advice and suggestions and whose supervision is backed by Government authority, cropped up continually during the Short Course, culminating at the close in the suggestion of Maude Holley in the formation of an Association of Community Workers.

Edith Main, of the Arkwright Mill, Spartanburg, was unanimously elected president of the newly formed association. Marjorie Potwine of the Saxon Mills, Spartanburg, was made vice-president, with Maude Holley of Riverside-Toxaway Mills, Anderson, secretary and treasurer. The association proposes to meet once a year for the discussion of topics of mutual interest in the work; to listen to addresses by experts on such subjects as will not only be mutually beneficial, but will enlarge their vision, quicken their conception of service and broaden their minds; and for that social contact which will send them back refreshed to their work. It seemed to be the opinion of all of them that their necessarily limited fields, while varied as to daily duties, did not make for outside contact, which will enable them to do the best work. Just as professional people in all lines find it wisest to "come out of their cage, and take their souls on a pilgrimage" occasionally, in order to keep at work with a vim, so did they need at least once yearly, inspiration which would prevent their "jobs from getting stale," to put it slangily.

The program for the Short Course was full of good things; thoughtful addresses were punctuated with informal questions and general discussions by this unusually earnest group of women. Everybody took part, everybody asked questions, and everybody helped to develop the subject treated, in a fine way.

Miss McKenna's period each day when she gave actual demonstrations, with a patient, as to home nursing, following a brief lecture, was of such interest that she has been asked to repeat it at the Short Course for Club Women, at the coming Summer School at Winthrop. Students and faculty alike dropped in to see this businesslike, capable women, whose technical training is supplemented with a far reaching vision of a nurse's sphere. Miss McKenna, as the superintendent of the St. Francis Xavier Hospital in Charleston, S. C., has established a Settlement House in connection with the hospital where her nurses get a fine training in social service. Florence Kelly, whose work for years was at Hull House with Jane Addams before she became the general secretary of the National Consumers League, told interestingly of her contact with the poorest classes of people in Chicago and New York, and of how her attention had first been called to the stupid indifference on the part of consumers as to how their purchases had been produced.

What may be expected from the state in the way of assistance, and where aid can be had for cases of feeblemindedness, waywardness, and delinquency, which do occasionally come up in the best regulated villages, was told by Albert Johnstone of the State Board of Charities and Corrections. Miss Hill, the expert, who has been employed by this board for the last year gave valuable practical advice and demonstrations along the same lines.

Margaret Byington of the American Association of Societies for organizing Charity gave great help on the fundamental principles which apply to all sorts of charitable and social service work, grouping her remarks around the one general theme of "What Every Social Worker Should Know About their Community."

Viola Paradise of the Children's Bureau at Washington spoke along the same lines.

The whole group listened with eager interest when Elizabeth Hyde of the Bureau of Labor Statistics told of what she had found in her travels gathering facts to be embodied in a bulletin soon to be issued by the department, and it was a matter of keen pride to the community workers that the mental comparison each made brought out that her particular cotton mill and mill village showed up so well in comparison with the rest of the United States, though as no names were given it was necessarily a general comparison. At the same time, it needs to be remembered that the mill villages which have community agents are the most progressive, for it is in these villages that the mill officials have at heart the best conditions for their employees, for they realize that where the home life is healthy, happy and comfortable, it means a steady reliable source of workers in the mills, and not the shifting population which is the bane of existence of some of the mills. It was as one, that the group heard with interest the remark made by one of the

speakers who had been a factory inspector in the North, that the Aragon Cotton Mill (which was the only one she had time to see) was the best lighted, best ventilated, and best arranged factory she had ever seen!

Space does not permit details about the whole program, but mention must be made of the offering of Dr. Ritter of the College Faculty. The enthusiasm with which she discussed the mental and moral training and development of children brought an answering glow from the hearts of the hearers and touched a side of the subject not hitherto reached.

The group entered with joyous abandon into plays and games in the gymnasium, and learned many new games for the playground work as soon as the spring opens. The enjoyment these women got out of just knowing others who were doing similar work, and of just "talking over" with each other their common problems was astonishing. Two of them discovered that they had been working for months in the suburbs of the same town, had seen each other and yet had never met.

The social side of the Short Course was taken care of by several little "coffee parties" in the dormitory parlors; a swim in the pool one night; the chamber of Commerce of Rock Hill was host at a moving picture play; an afternoon was spent visiting the nearby mill villages, afterward being entertained at "tea" by the Aragon Woman's Club; and the last night the community workers gave a banquet at the Carolina Hotel. Delicious refreshments were served on a table bedecked with pink sweet-peas. Pink balloons and toy pistols were used as place cards, this being a "Hot Air Convention" and the speakers being "Big Guns." Minnie Macfeat, in her happiest style, presided as Toastmistress. Dr. D. B. Johnson, who was elected an Honorary member of the association, responded to the toast: "The Extension Service of Winthrop College," making an address which was sure to deepen the sense of responsibility of the young women as to the work entrusted to them, and full of information concerning the forces at work in the field of South Carolina, and their aim—Home Betterment. Mary E. Frayser told of the beginning of the mill community work, and its present growth to nineteen mills with fifteen young women at work. Miss McKenna, speaking of mill village work from the point of view of the nurse, considered the organization of the association one of the most forward steps taken in the state recently, and paid a tribute to "the man behind the gun—Dr. D. B. Johnson—without whose help and that of Winthrop such a thing would not have come to pass."

If you would have friends be friendly. Be enthusiastic. Appear to have good nature to spare. Act as though bubbling over with a desire to spread good cheer among your fellows. Go out of your way to assist those who need assistance. Give praise where praise is due, and be silent at other times. Be kind to those whose tastes may not agree with yours, and school yourself to overcome all kinds of incompatibilities. Look into every man's eye with a gaze unflinching and steady. Grasp every hand with a firmness which shall induce the belief that deceit is unknown in this world. And smile.—*Park's Piping Parables.*

Cotton Goods in British India.

The chief obstacle to the immediate expansion of American cotton goods trade in the Bengal Presidency of British India, is the fact that the great volume of the imports from abroad consists of lines which we do not manufacture. This will be immediately apparent to any cotton manufacturer who carefully reads the report just issued by the Bureau of Foreign and Domestic Commerce, as Special Agents Series No. 127, and compiled by Ralph M. Odell. Approximately 50 per cent of the total piece-goods trade, which amounts to $85,000,000 or $90,000,000 annually, is in gray and white dhoties, lines with which cotton manufacturers in the United States are entirely unfamiliar and which they have never attempted to produce. Nor do they make other classes of goods that are important in the trade, such as gray shirtings, jaconets and mulls with colored headings, white scarves, nainsooks, printed saris, and colored lungis. The only large lines that we manufacture, and which therefore offer immediate opportunities for American trade expansion, are white shirtings and prints, and even in these slight changes in construction and finish may be necessary in order to make them conform to the requirements of the market.

"The cotton-goods trade of Bengal, as of all India, is so largely dominated by England that the demands of the people have been influenced and directed by the lines that the mills of that country produce," says Mr. Odell. "We can only meet this competition to an appreciable extent by arranging to supply the goods that the most of the population requires. The manufacturer of dhoties would involve some initial difficulties because we have never made them, and the insertion of colored headings in the filling at intervals of every few yards would be costly. In England these headings are mostly put in by hand, but it should be possible to insert them automatically on a two-box loom. While American manufacturers would probably not be able to compete in the fine qualities of dhoties, they ought to supply the low and medium qualities at competitive prices after they had become experienced in the weaving of them and had begun to make them in quantities. Dhoties constitute such a large item in the enormous cotton-goods trade of India that it behooves them to study the samples which have been forwarded with a view to making similar goods to meet the requirements of the market.

"Grey and white shirtings also present opportunities for American trade, and it should not be difficult for us to supply some of the qualities which are sold there. Reference has already been made to the fact that certain standard qualities of American print cloths 38 or 39 inches wide might, with very few changes, be introduced in this market. These changes involve the use of softer twisted yarns, the elimination of the reedy appearance which the goods, as now made, sometimes have, and the insertion of a colored heading in the filling at the end of each piece.

"In colored and printed goods undoubtedly an opportunity presents itself for the sale of American prints, both in white grounds and in the sari class of prints that come in pieces. New patterns would probably have to be furnished, but many of the stock patterns of American printing concerns should prove popular. Colored lungis, particularly

those without headings, could be supplied by manufacturers in the United States, and although the demand for them is comparatively small in Bengal, in other markets in India, particularly Burma, similar or nearly similar goods are sold. If American manufacturers would undertake to make them, they could probably build up a substantial trade in them after a few years.

"The lack of an American firm in Calcutta dealing in cotton goods," Mr. Odell continues, "is undoubtedly an obstacle to the development of our trade, particularly as the various importing concerns of British nationality have close relations and long-established connections with manufacturers and shippers in the United Kingdom and are naturally more interested in promoting the trade of the mother country than that of any other nation. Too much importance should not be attached to this fact, however, because competition is too keen in the trade of Calcutta to permit sentiment to play a large part in business. If American manufacturers will provide, either directly or through their export agents, facilities equal to those extended by competing concerns in other countries, they will have no great difficulty in finding reliable importers to handle their lines. The manager of the piece-goods department of one of the largest firms in India assured me that he would be glad to give careful consideration to American cotton goods and to handle them if the qualities and prices were such as to make it possible to sell them. In order to assist American manufacturers in familiarizing themselves with the requirements of the market and in introducing their goods, this firm has taken deep interest in supplying full and reliable information regarding the principal lines which enter into the trade, and this information has been incorporated in this report.

"It would not be a profitable venture for American cotton-goods manufacturers or exporters to establish a branch office in Calcutta. With very few exceptions, none of the large importing concerns here are engaged in the piece-goods trade exclusively. Several American exporting houses and one manufacturers' agent have offices in Calcutta, but none of them are handling cotton goods except on a very limited scale. It is, of course, possible for American manufacturers to introduce their lines through these firms, but it is doubtful if any considerable business could be done by this method because the trade in piece goods is so large and, in many respects, complicated, that the best results can be reached through large concerns that are familiar with the market and employ experts in their piece-goods departments. This is the chief objection to the plan mentioned in my earlier report on Madras (Special Agents Series No. 124, p. 35), in which it was suggested that an American company be formed on a cooperative basis to handle various lines in addition to cotton goods. A new firm would find it exceedingly difficult to master the intricacies of the trade in Calcutta and to introduce new and untried lines.

SUGGESTIONS, AND A WARNING.

"If American manufacturers desire to enter this market, either in the few lines which they manufacture and which are nearly similar to those in demand here or in new lines which they have not hitherto produced, they should get in touch with one of the large importing firms in Calcutta. [A list of the principal names and addresses was transmitted with this report and will be supplied on application to the Bureau of Foreign and Domestic Commerce or its district or cooperative offices. Refer to file 947B.] A full line of samples, based on the samples accompanying this report, should be prepared and forwarded to the firm selected, and prices should be quoted c. i. f. Calcutta or, if that is not possible, detailed information should be given regarding the cubic dimensions of bales and cases and the freight rates prevailing at the time the samples are submitted. The question of terms of payment should not be difficult, as there is an American bank in Calcutta and other banks represented in Calcutta and elsewhere throughout the Far East have their own branches or correspondents in New York. Information in regard to the financial standing of Calcutta firms can easily be obtained, and drafts for the payment of goods can be negotiated through them. Most of the large European firms here will probably prefer to pay cash in order to save interest charges.

"Care, however, should be exercised in dealing with native firms. Some of these are reputed to be in good standing and able to meet all their obligations, but the desire to do business direct without the medium of European firms has resulted in the establishment of a number of native importing concerns, some of them with European names, many of which are only too ready to place orders for goods but to which it is not safe or advisable to extend credit.

"Comparatively few of the native firms are willing to pay cash in New York before shipment, although they may be in good financial standing. The manager of the Calcutta branch of the International Banking Corporation states that it is an easy matter for American manufacturers and exporters who desire to do business with native firms to receive full information by inquiring at the head office of the bank in New York. In an interview he stated that the demand for confirmed credit constitutes a serious handicap to the expansion of American trade in this market, not only because it is costly to the importer, but because it leaves him without any redress if the manufacturer or exporter fails to carry out his contract or delivers goods which are not equal in quality to the sample on which the order was placed. It is his opinion that American manufacturers could do a much larger business here, with comparatively small danger of loss, if they would be satisfied with the ordinary bank credit that local firms provide in their dealings with other countries.

"It is, of course, necessary to exercise due care in such transactions, but if, upon inquiry, the bank in Calcutta agrees to open credit for a native firm, the bank manager believes that American manufacturers who ship to them on terms of payment on arrival of the draft or of the goods would not be taking more than the ordinary business risk. The draft could, of course, be discounted at the bank in New York so that the manufacturer would be paid on the day of shipment. Recourse would be had to the shipper if the importer failed to meet the draft, but in the opinion of the bank manager quoted, instances of dishonoring drafts would be rare, provided careful inquiries had been previously made, and provided also that the manufacturer or exporter fully carried out the terms of the contract. The argument that the importer saves interest charges and gets the advantage of discounts by paying cash does not appeal to many of the native firms and other importers who, though

financially reliable, are working on a small capital, as all their business is on a credit basis largely because the people are almost entirely dependent on agriculture as a means of livelihood and they prefer to buy goods on terms of two or three months even if they have to pay more for them.

"The granting of promiscuous credit is perhaps nowhere more dangerous than in India, but some modification of the insistent demand for cash before shipment along the lines suggested would unquestionably lead to a considerable expansion of our trade in this market, and if ordinary care is taken in making connections by first having the local firm open an ordinary credit with the American bank in Calcutta there would be a minimum of risk involved.

"The fear that the Indian firm will make complaints about the quality of the goods delivered or use other means to avoid payment should not deter manufacturers and exporters in the United States from granting some concessions in the matter of terms, because it is easy to secure a fair and just settlement through the various arbitration tribunals of the Bengal Chamber of Commerce.

"Aside from gray drills, which are imported in small quantities, American cotton goods are not known in this market, but the excellent reputation for quality that these drills have enjoyed through a long term of years is an asset that would be of material advantage in attempting to secure trade in other lines. If travelers could be sent out, either by one manufacturer or selling agent or by several firms on a cooperative plan, to personally canvass the importers and show their samples, some business could be done. Such travelers, however, should not make one trip only, but should arrange to visit the country once or twice a year, preferably in the late fall or early spring, when climatic conditions are most favorable and when orders are being placed by the importers.

"The so-called pooja or native holidays in October are usually preceded by an active demand for goods, and orders for these are usually placed in the early spring for June to August or September delivery. December to March is also a time of fairly brisk trade. Manufacturers and shippers in Manchester send out travelers once or twice a year. These are usually representatives of large firms that have their own agents in India or of smaller concerns that sell to native dealers and a few European importers. The large European firms usually have their own branches in Manchester and place very few orders with travelers. But as American goods are so little known in the market, and comparatively few of the firms in Calcutta have established connections in the United States, it will be highly advisable for American manufacturers to send out travelers to introduce their lines.

"Whether it will be best to appoint one firm as an exclusive agent in each of the important ports or for the whole of India or to sell to several firms are questions of policy which can best be decided by a personal representative on the ground. Ordinarily, selling through an exclusive agent is preferable, because it gives the importer an incentive to handle a line of goods. If he knows that his competitors can buy the same goods on the same basis, he will naturally be less interested in establishing the brands and qualities on the market.

"Emphasis should be laid on the fact that India, in all lines of the cotton-goods trade except gray drills, is a virgin field so far as American cotton manufacturers are concerned, and it is a market that is very largely dominated and controlled by English mills. If American manufacturers seriously desire to enter it they must inaugurate a permanent policy along broad lines; spasmodic efforts to place a few orders here and there will not be sufficient. They must set about to produce the kinds of goods that are in demand and back up their efforts with progressive selling methods that will enable them to place their products before the people. A generous supply of samples, quotations c. i. f. Calcutta, the acceptance of small initial orders, and the granting of some concessions in prices in order to make it profitable for the dealers to handle the goods are the most important points for American manufacturers and exporters to bear in mind.

"The present is a particularly opportune time to get into the trade, because the rising cost of English cotton goods makes it it possible for us to supply some lines in which hitherto it was impossible for us to compete because of high prices. It is difficult to say whether the cost of English goods will radically decline after the war, but in the opinion of many they will never be as cheap as they have been in the past. In any case it is likely that, if American cotton goods are introduced in the market at a time like the present, when conditions are most favorable to their sale, they will to a large extent be able to maintain a place in the trade in the future because of the high reputation for quality that they are sure to establish."

Bringing the Cotton Mill to the Public.

BY E. E. DICKSON.

With Boards of Trade actively engaged in promoting the welfare of their supporters, with Rotary clubs doing all they can to boost their home cities, it is a backward place indeed which is not appealing to the public pride in one way or another. Let one travel from Boston to Springfield, Mass.—a two hours ride—and he will see a variety of sign boards depicting the advantage of this or that town, the excellent factory sites and water power, unusual educational facilities and so on. These are all excellent and all do their part, yet the real boosting or knocking comes from the citizens themselves. And how can these same citizens proclaim the advantages of their particular environment if they are not acquainted with their own industries and products except in a very indefinite way?

In a small city in Maine there is manufactured a certain brand of sheeting known all over the United States and even in foreign countries. A teacher in one of the public schools of that city conceived the idea that it would be a very good thing for her pupils to know something about the manufacture of cotton cloth and incidentally to learn how this particular sheeting was made. Since it was not possible to take the children through the mill, the next best plan was to bring within certain limitations the mill to the children. Accordingly, through the courtesy of the mill officials, the following plan was devised and carried out:

A plain box, 24 x 16 x 3 inches with a hinged cover to fasten down tightly was made. Brass handles were fastened to the cover in order that the box might be carried around

easily. This box was divided into compartments as may be seen in the illustration, and each was numbered. The contents were as follows:

1—Branches from the cotton plant with half opened bolls.

2—Cotton drawn directly from the bale as received at the mill.

3—Cotton cleaned by the pickers and ready to be carded.

4—Some of the dirt and refuse removed from the cotton by carding.

5—Card sliver.

6—Sample of the small fibres removed by the cards.

7—Drawing sliver.

8—A bobbin of slubber roving.

9 and 10—Bobbins of roving from intermediate and fine frames.

11 and 12—Bobbins of warp and filling from spinning.

13—A piece of cloth and warp as cut from a loom to show the starched warp before weaving.

14—Samples of the sheeting with the respective trade-marks.

On the cover of the box was mounted a series of photographs depicting the various machines in actual operation.

THE DEMONSTRATION BOX.

These pictures were numbered to correspond as far as possible with the numbers on each compartment of the box. For example (1) showed a southern cotton field in the picking season, (3) a picker, (4) revolving flat card, (7) drawing frame, (8, 9, 10) slubber, intermediate, and fine frame respectively, (11) spinning frame, (12) spooler, (13) warper, (14) slasher, (15) warp drawing machine and (16) a draper loom in operation.

In addition to these, a complete explanation of the various processes—their particular functions and uses—was given to the teacher. Each process being numbered, it was an easy matter for the teacher to refer to her paper and then to the box in order to make her explanation clear. Thus the children were able to see a picture of each machine in operation, see the product and understand how it was obtained.

The exhibition created considerable interest, and being sent around from school to school, the children naturally told their parents who were interested and realized, perhaps for the first time, that right in their midst was manufactured an article of national reputation. When they went to other places the most natural way for them to refer to their home city was as "the place where blank sheeting was made."

This is merely an illustration of the bringing into the minds of children, who will be the boosters of their city in a few years, a conception of the actual industries carried on at home. The same general scheme can be applied to almost any industry. In addition to having once a year a "Booster" week in which the products of the city are shown in various store windows have some of these exhibition boxes made and sent around to the schools. Then let them be put in the public library or on exhibition in some public place where the parents and others may view them. It all tends toward the slogan—"Know your city's industries and boost."

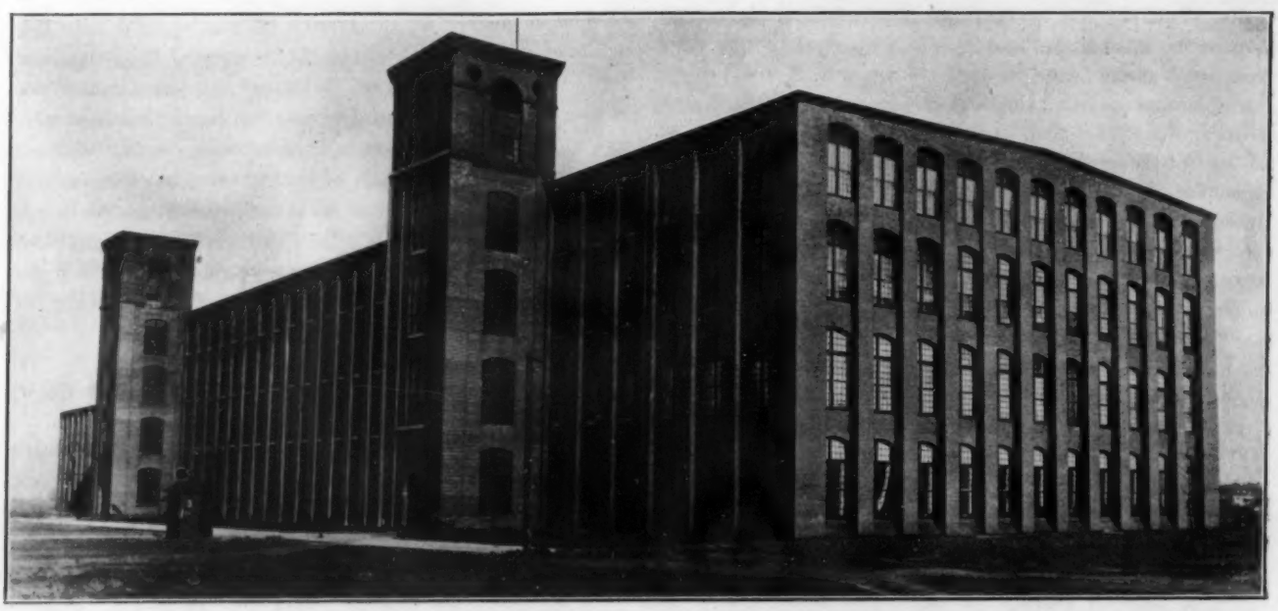
Some Facts About Wadsworth, Howland & Co.

In 1845 P. H. Thompson and Samuel Wadsworth started in business as Thompson & Wadsworth, druggists, at 116 State Street, Boston. In the earlier days of the industry, many of the firms classified as druggists also handled paints, dyestuffs and other chemicals such as were sold to straw goods manufacturers and bleacheries. In 1843 Matthias Crocker and Charles H. Badger had begun a similar co-partnership as Crocker & Badger, and continued as dealers in paints, oils, drugs and medicines until 1849. In 1850 Matthias Crocker, after the dissolution of the firm of Crocker & Badger, formed a partnership with George W. Banker at 107 State St., as Banker, Crocker & Co., dealers in drugs, paints and glass. In 1751 George O. Carpenter was admitted to this firm, the style being unchanged.

In the meantime, P. H. Thompson only remained with the firm of Thompson & Wadsworth for one year, and in 1846 Samuel Wadsworth and John M. Nye became co-partners under the style of Wadsworth and Nye, remaining at the stand at 116 State Street until 1850. In 1851 Lawson Valentine was admitted, and for one year the name was Wadsworth, Nye & Co.

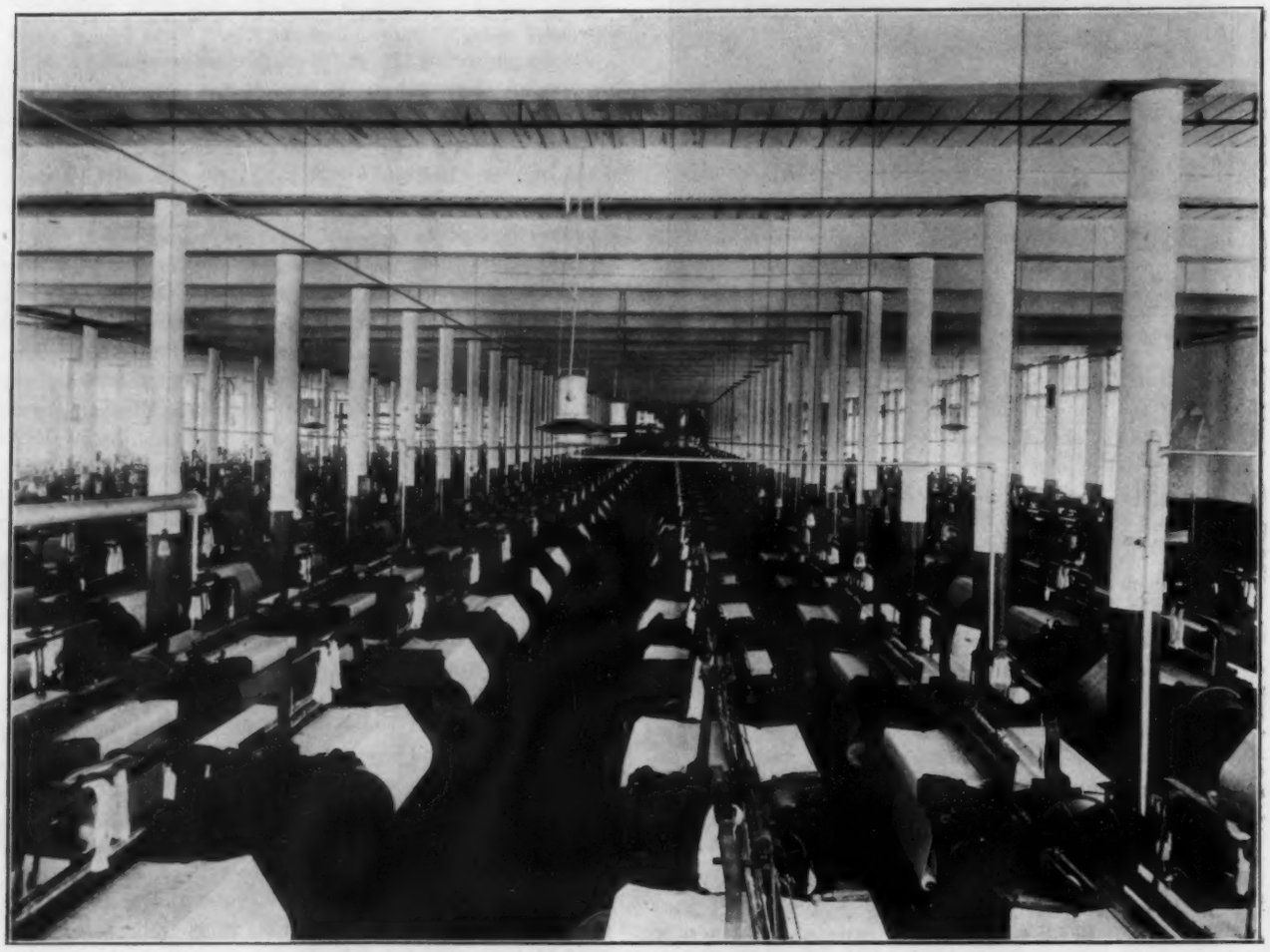
In 1852 Matthias Crocker retired from the firm previously mentioned and joined Wadsworth, Nye & Co., the firm name then becoming Wadsworth, Nye & Crocker, with headquarters at 38 India St., continuing thus until 1855. The interest of John M. Nye in the firm having ceased, and Samuel Wadsworth having been admitted, the name was changed to Wadsworth & Co., and so continued during 1856 and 1857. In 1858 Howard Wadsworth became the head of the firm, Matthias Crocker retiring. Samuel Wadsworth, however, still retaining his interest. It then became Wadsworth & Co., continuing thus until 1866, although Marcus M. Wadsworth took the place of Samuel Wadsworth in 1859.

In the meantime, in 1858, another paint house had been started in Boston by Matthias and his cousin Nathan Crocker. This firm was known as M. & N. Crocker. They leased a store at 34 India Street and handled paints, oils, glass, chemicals and dyestuffs. This continued as M. & N. Crocker until 1861, when Hiram Wadsworth proposed a consolidation of the two firms of Wadsworth & Co., and M. & N. Crocker. This was finally assented to and the name then became Crocker, Wadsworth & Co., the firm deciding to retain the 34 India St., store and to discontinue the old store of Wadsworth & Co., at 38 India Street. In 1863 Matthias Crocker left the firm to go into the chemical importing business. The remaining members of Crocker,



The Granby Mills, Columbia, S. C., Painted Throughout With "Dixielite."

Wadsworth & Co., continued business at the old stand, and in 1866, Charles F. Howland was admitted with the firm name still unchanged. Hiram Wadsworth retired in 1867. In 1869 Nathan Crocker ceased to take an active part in the business, still retaining an interest, and John Wadsworth was admitted. The firm then became known as Wadsworth Howland & Co., and continued thus for five years. In 1874 Nathan Crocker sold out his interest, and from that time until the end of 1883 the firm was known as Wadsworth Brothers & Howland. In 1884 Marcus M. Wads-



The Weave Room at the Granby Mills.

worth retired and Lucius Turner and Henry A. Robbins entered the firm which then reverted to its former style of name.

After making several changes in location because of the necessity of securing space, in 1893 this company was incorporated under the Massachusetts laws and became Wadsworth, Howland & Co., Inc., and has continued up to the present with only slight changes in its directorate.

The first paint factory building of Wadsworth, Howland & Co., was of brick, two stories high, and measured 90 x 40 feet exclusive of the engine room and elevator. Today this firm requires 65 paint mills with their accompanying mixers to do the necessary grinding of white lead, paints and colors. They make their own sample cards, display color racks, and other advertising material. Special can-filling machines, which can be so adjusted as to deliver the exact amount of color to each package, are used in putting up paste paints. They also operate their own machine shop and printing office, as well as a large wood-working shop where stretchers for canvas, easels, sketch boxes, sketching seats and other various articles for the artist department of their business, is manufactured. They also have a large crayon factory in connection with their establishment.

To better guard the health of their employees they installed about two years ago, sanitary washbowls and steel ventilated lockers in a room especially built for that purpose, also adding several bubbler drinking fountains and a dining room fitted with the necessary tables and chairs for the operatives to take their lunches during the noon hour.

The "Bay State" brands of liquid paints and varnishes manufactured by Wadsworth, Howland & Co., Inc., at their Malden, Mass., factory, has become increasingly familiar to the manufacturers and residents of the country. Under the trade name of "Dixilite" this firm has introduced a perfected mill white paint that has behind it 65 years of experience in paint making. The accompanying illustrations show one of a number of mills that are whitening their walls with "Dixilite."

R. MCHARDY MAULDIN has accepted a position as selling agent with the Saco-Lowell Shops and will be identified with the Greenville, S. C., office, this being a branch of the Southern office at Charlotte. The change connects him up with one of the stronger textile machinery concerns of the United States. This company's export department has just completed two mills in China, have orders for two more and also are equipping a mill in South America.

For twelve years Mr. Mauldin has been connected with the engineering office of J. E. Sirrine, in the machinery department, and it is this particular work that has fitted him for the new work he is undertaking. He is simply crossing the road, as it were, from the engineering and buying side to the selling side of the textile business and his new work will carry him over the entire Southern and middle western states.

Mr. Mauldin is a Greenville boy, a graduate of Furman University, class 1904, and his local friends are glad that the new work will not take him from Greenville, but that he will continue to make this his home.

It goes without saying that McHardy Mauldin is very popular among the men of the textile industry and he has a host of friends who will be glad to hear of his promotion. His former work has taken him to several hundred mills in the South and he has been fortunate in building up an extensive acquaintance among the mill men that should be a valuable asset in his new line of work.

Anti-Acid Valves.

The Lunkenheimer Company of Cincinnati, Ohio, state that during the past year, there was an exceptionally great demand for valves made entirely of iron for use in handling cyanides and other solutions which attack metals having copper as their basic element and which consequently could not be handled by brass valves or valves having any part made of brass. This company supplied a large number for use in dye and chemical manufacturing plants, but the demand was not confined to these sources as quite a number were also supplied for use in mines, oil refineries, etc.

In the manufacture of their iron valves a composition is used that is exceptionally free from impurities resulting in solidity of grain structure which insures great strength and makes the castings more resistant to corrosion and chemical attack. They maintain large and well equipped chemical and physical laboratories through the aid of which they are enabled to furnish valves and fittings of such materials as best adapt them for the handling of various corrosive solutions.

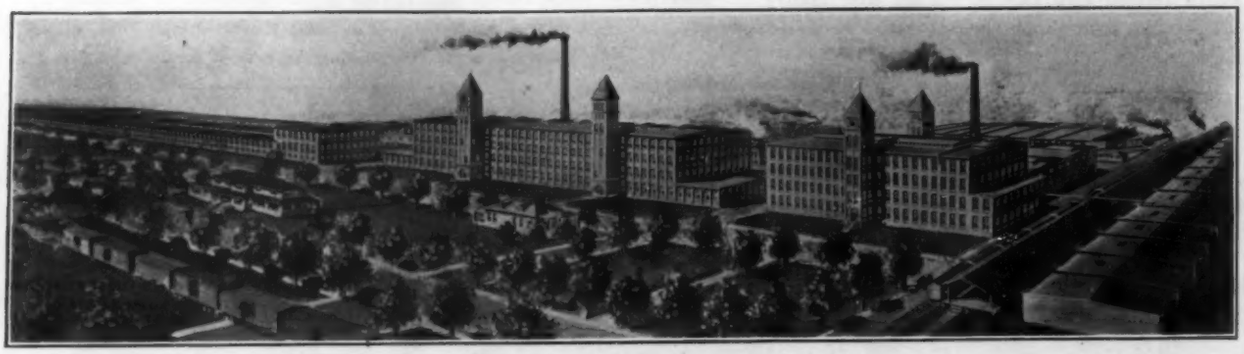
For use in handling the more severe solutions, such as caustic soda, caustic potash, soda-ash and other similar alkaline liquids the company employs a composition known as "Lunkenheimer nickel-iron." This metal has exceptional acid resisting qualities and the long and satisfactory service rendered has lead many to use valves made of this material.

Special composition brass or bronze valves best resist the chemical attacks of some acids and again a nickel composition is found the better adapted, and for this reason The Lunkenheimer Company, wish to caution the trade that when ordering, they specify the nature of the liquid to be handled which will enable them to select the proper material and thereby save considerable trouble and expense.

Announcement.

J. E. Sirrine, the prominent mill architect and engineer, located at Greenville, S. C., desires to announce that the use of his name in conenction with an advertisement of the Leon L. Wolf Paint Company in a recent issue of COTTON was entirely without his authorization or consent. Furthermore, he desires it understood that he has never specified the paint manufactured by this company in any of the mills built under his advisory capacity, nor has he recommended its use elsewhere.

The Draper Corporation at Hopedale, Mass., have just issued the fourth edition of "Textile Texts." As was the case with former editions of this catalogue, it contains all the information previously listed, and with all features brought down to date, also including a number of new tables. The present volume is very handsomely gotten up, being bound in flexible leather with gilt edges and gilt title, and printed on thin bible paper, making the book a size suitable to carry in the pocket. In its present form it presents a pocket encyclopedia well worth the attention of every mill superintendent.



THE LANCASTER COTTON MILLS, LANCASTER, SOUTH CAROLINA.

A South Carolina Cotton Mill.

The illustration at the top of this page shows a modern southern cotton mill. This is but one of a group of successful mills, of which Colonel Leroy Springs is president.

The Lancaster Cotton Mills are capitalized at $2,500,000; contain 140,000 spindles and 3006 automatic looms; employ 1600 operatives, with a total annual pay roll of $400,000; and consume 24,000 bales of cotton each year, producing therefrom 114,000 yards of cloth daily.

The weave shed, on the left in the picture, is 776 feet long and 225 feet wide. An interior view of this room is shown at the bottom of this page.

The entire plant is 1605 feet long and covers 8½ acres, with a total floor space of 15 acres.

The mills own 404 cottages occupied exclusively by operatives.

Drinking water for the mills is secured from wells 400 feet in depth and circulated through ice boxes throughout the plant.

The new club house in the center foreground will cost when completely equipped around $35,000. The building is 104 feet by 56 feet. On the first floor is located the library, reading rooms, game room, director's office, and men's and women's shower baths and toilets. The second floor is arranged for an auditorium with a seating capacity of 516 and a stage 16 by 26 feet. The building materials are concrete and brick with a slate roof.

Acknowledgement is hereby made to R. J. Shutting, of Chattanooga, Tenn., and the Draper Corporation, Hopedale, Mass., for the photographs shown herewith.

3006 AUTOMATIC LOOMS IN THE WEAVE ROOM AT THE LANCASTER COTTON MILLS.

Mill Conditions and Market Reviews.

Southern Mill Situation.

All over the South cotton manufacturers are backing up the President's appeal to the people to aid in the production of foodstuffs by cooperating with their operatives and such non-operatives as may live in the mill villages with the result that many gardens, large and small, will be planted this year on land previously unworked in this capacity. Numerous individual examples of such mills could be given, but the movement is general enough to practically include all of them.

Some of the mills are aiding their operatives to surmount the high cost of living by the means of increased payrolls, while others are achieving a similar result by suspending all charges of house-rent for the houses in their villages.

The Crawford Cotton Mill at Crawford, Ga., has been sold by L. F. Edwards of Athens, its former owner and operator, to J. W. Ingle of Athens and J. H. Etheridge of Eatonton, Ga. It is reported that the mill will be enlarged.

Ninety new operatives' houses are being added to the village of the Lanett Cotton Mills at Lanett, Ala. This is to take care of the increase in the size of the mill when the new weave room is completed.

The Shawmut Mills at Shawmut, Ala., have recently contracted for three new cotton warehouses with a capacity of fourteen hundred bales. A handsome new eleven room school building is also to be built at this village to cost approximately $25,000.

The German American Mills at Draper, N. C., are pushing the work on the new saw-tooth weave shed which is to accommodate the 500 new Draper looms recently noted as purchased by them.

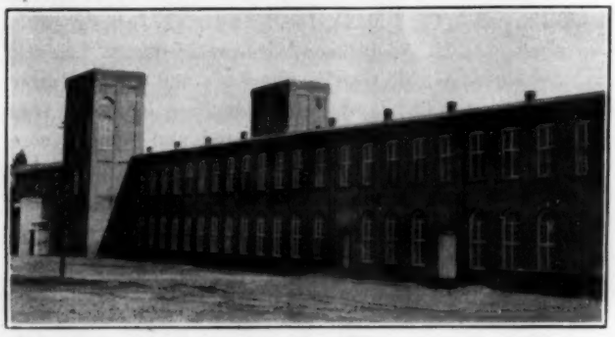
The Cedartown Cotton & Export Co., at Cedartown, Ga., are erecting twenty new cottages for their operatives. This is to take care of the additional force necessitated by the night run.

The Dixie Cotton Mills at LaGrange, Ga., are building a handsome bungalow for A. Culberson, Jr., the superintendent.

It is reported that the Cannon Mills at Kannapolis will begin the manufacture of automobile tire fabric at an early date.

The Graniteville Manufacturing Co., of Graniteville, S. C., which was placed in the hands of receivers in the latter part of 1915, and about which we have commented from time to time, has emerged from the receivership and been restored to the stockholders. R. J. Rhett of Charleston, S. C., and Jacob Phinizy of Augusta, Ga., were the receivers. They placed S. L. Fortson of Augusta in charge of the office end of the proposition and secured Frank W. Gurry to handle the executive end of the proposition. As reported from time to time, these mills have been consistently making money, and up to February 1st they had paid all the interest and 30 per cent of the indebtedness of the $990,000 against them. The creditors by court petition before Judge H. A. M. Smith at Aiken, S. C., indicated their satisfaction with the management and the prospects, and Judge Smith thereupon restored the property to the stockholders. Great credit is due the energetic management of Messrs. Fortson and Gurry for the manner in which this work has been accomplished. As reported in a recent number, Mr. Fortson has now taken up the active management of the Enterprise Cotton Mills at Augusta, being succeeded at Graniteville by Coles Phinizy. Mr. Gurry continues as the executive head of these mills and the prospects for their future look very bright.

A charter has recently been granted by the secretary of state to the Lancaster Cooperative Store to be located at the Lancaster Cotton Mills, Lancaster, S. C., with a capital stock of $5,000 divided into 500 shares of par value of $10.00 each. This store was organized for the purpose of furnishing its shareholders and others with such articles of merchandise as they may need. It is understood that about



Rear View of the Manchester Mfg. Co. Mill at Macon, Ga.

400 of the 500 shares have been subscribed. A similar cooperative store at the Hampton Cotton Mills, or what is now known as the Hampton branch of the Pacific Mills, has proven very successful.

The work of organizing a company to build a cotton mill at Hendersonville, N. C., is reported to be going forward rapidly, and stock subscriptions have nearly reached the amount desired.

The McIntosh Mills at Newnan, Ga., are adding some new machinery, and have recently built a warehouse 30 x 60 feet, as well as five new operatives' cottages.

The Sibley Manufacturing Co., Augusta, Ga., gives the following details with regard to the installation of new machinery in its plant: 180 32-inch looms are now being installed and 100 60-inch looms are to be delivered in June. These looms are simply to take the place of old looms which are being thrown out, and no additions will be made to the plant. Two new drawing frames, 4 new spinning frames and 9 new warpers have also been placed.

It is reported that the control of the Ozark (N. C.) Mill has passed into the hands of Messrs. John C. Rankin and S. M. Robinson of Lowell, and Frost Torrence, of Gastonia, these gentlemen having purchased the entire holdings, $75,000 worth, of the Rankins. It is understood that some of the stock in this mill changed hands at fancy figures, the report being that some of it brought as high as $365 per share.

The central building of the Southern Utilization Co., of

Charlotte, N. C., with its contents was destroyed by fire on April 5. The loss was not entirely covered by insurance, but the building will be immediately replaced. This company was recently organized to succeed the Charlotte Cotton Fiber Co., manufacturers of mattress felts and batts.

The new addition of the American Net & Twine Co., Blue Mountain, Ala., mentioned last month, will be three stories, 162 x 114 feet, equipped with 5000 spindles and accompanying machinery; and 11 new cottages for operatives will be added to the model mill village in which every house is furnished with hot and cold water, electric lights and sanitary plumbing.

The Maginnis Cotton Mills, New Orleans, La., will install 5,000 additional new spindles with accompanying opening, picking and carding machinery, but have not decided to increase its mill to the extent which had been anticipated. It is now arranging contracts for the additions, which will largely increase its production of cotton sheetings, ducks, osnaburgs, etc.

The Hutcheson Manufacturing Co., at Banning, Ga., has changed hands, and is now controlled by the officials of the Tallapoosa (Ga.) Mills, Inc. Justin C. Jackson is the new president; H. A. Jackson, vice-president; A. L. Jackson, treasurer; G. M. Greely, secretary and C. E. Pearce, superintendent. The capital stock has been increased from $80,000 to $160,000 ($80,000 preferred and $80,000 common), and as recently announced, the mills contemplate increasing their present equipment of 5,000 spindles by the installation of an additional 2,500, but the exact time when this increase will be made has not yet been decided upon. It is also understood that the plant is large enough to accommodate the enlarged equipment, and that no addition will be necessary. Single and ply yarns, 4's to 16's, are manufactured.

Organization has been completed for the Cheraw (S. C.) Cotton Mills, recently incorporated with $200,000 capital. Robert Chapman is president and treasurer, with G. W. Duvall as vice-president and C. C. Stokes secretary. This company has purchased a 50-acre site, and will build a cotton factory.

The Massachusetts Mills, Lindale, Ga., are building several new bungalows in their mill village.

The Carolina Cotton and Woolen Mills Company at Spray, N. C., have bought 100 acres of land across Smith River bridge on which they will build fifty houses for employees of the Woolen Mills employed in the Rhode Island Mills district. These will be built by the company and not on contract as has been the custom. They have also let a contract, or placed an order, for one hundred new motors that are to be used in their new mills.

In addition to the new knitting mill now in course of construction at Asheboro, N. C., a cotton mill is also to be built. Local business men and capitalists are taking up the subscription of stock, with the expectation of beginning the work of construction in the late spring or early summer of the present year. W. C. Hammer, D. B. McCrary and W. J. Armfield are among those interested.

The Standard Processing Co., Chattanooga, Tenn., has given a contract for the recently announced two-story brick addition to its mill, which has been necessitated by their increasing business in bleaching, gassing, etc. They will install two more gassing machines, giving them five in all, and also a new mercerizing machine, which is one of the largest type made by Smith, Drum & Co., Philadelphia.

The Victor-Monoghan Mills, Greenville, S. C., are replacing the old looms of three of their plants with new model Draper looms. At the Walhalla plant 390 new looms will be installed; 450 will be installed at the Seneca plant and 490 at the mill in Union. In addition the company is installing humidifying systems in its Monaghan plant at Greenville, and its Victor plant at Greer, the contractor being Stuart W. Cramer of Charlotte, N. C.

Additional carding machinery is to be installed at the plant of the Aragon Cotton Mills, Rock Hill, S. C., manufacturers of print cloths, and about 70 operatives' houses are to be erected in the near future to accommodate the force of night operatives which is to be employed.

The foundation of the new weave shed for the Jefferson (Ga.) Cotton Mills has been laid, and when completed the present equipment will be rearranged, part of it replaced, and a total of 320 42-inch Draper looms operated. At present 174 looms comprise the equipment, the product being sheetings and drills. The mills are now run entirely by the electric drive, and a ventilating and cleaning system has just been installed. These improvements are being made by W. T. Bryan of Athens, Ga., who last summer purchased the mills from the receivers, and has since been operating them.

New England Mill Situation.

Cotton mills have plenty of business in hand at profitable figures, yet it can hardly be said that the prosperity of the moment is at all exhilarating. Too many uncertainties have come into the situation to make the lot of the manufacturer a happy one. The rising costs are upsetting all theories of what might have been expected for the second quarter of this year, and the growing congestion of transportation has long ceased to be reasonably attributable to weather. Something deeper and more threatening underlies the industrial future and despite the very strong demand for late delivery merchandise, mills in this section have not been willing to undertake the long engagements that have been accepted elsewhere.

There is an undercurrent of anxiety concerning the action of operatives during the summer. The Fall River wage agreement will end in June, a six months respite against agitation having been provided for when the last advance was given, just before the holidays. At New Bedford, some of the operatives' unions have already begun the consideration of what action shall be taken when the Fall River agreement expires, the assumption being that the arrangement in that city was binding on all textile workers. Additional calls are being made on the limited labor supply through the completion of new mills, two now being made ready for operation, and two others being in contemplation. Demands for at least 3,000 more skilled operatives are already in sight and the supply is tending to grow lighter in consequence of demands for government service, and opportunities to leave the mills and work on farms during the summer.

Everything points to an increasing labor shortage and manufacturers appreciate that the position of workers wanting more wages will be a very strong one as the summer

approaches. Curiously enough, the rising living costs make such demands seem less unreasonable.

The probabilities of difficulty in getting coal seem more real than they did three months ago. Transportation facilities are being restricted all the while in consequence of the demands of the government for vessels of all kinds, and even where vessel owners would be content to keep the ships in commercial service, they are realizing that raids upon the coast shipping are not impossible. Already many coal contracts have been vitiated, instances being cited of mills having contracts at $3.75 a ton, and being compelled to pay nearly $10 a ton, with little or no prospect of having the original contracts completed.

The rising costs on other supplies have become very serious. Starch, leather findings of all kinds, and many of the hardware specialties used for mill supplies, have reached levels of price wholly unthinkable two years ago, and even when mills are ready to pay the price it is by no means easy to secure deliveries. Many manufacturers who considered themselves partially forehanded a year or more ago in laying in large supplies of many necessities, are finding now that new prices have become a matter requiring consideration before any new cloth contracts are made, something that was hardly considered in past years. Great care is being used to conserve supplies and eliminate waste, and many repair shops in the mills are undertaking work that has not been attempted in years because prices for new goods were too cheap to have mechanics bothering about renewals of used materials.

An interesting illustration of the situation in machinery for mill purposes was given in the last week in March where the Barnaby mill machinery at Fall River was offered for sale. Many cards were sold at prices 20 per cent higher than the machines could be bought for even two years ago. Many looms were sold at prices far better than loom builders would have been glad to accept when the mill was shut down two or more years ago. A great dearth of second hand mill supplies was disclosed by the eagerness of bidders to pick up the odd lots offered.

There is no doubt of the full demand for goods. Print cloth prices rose from ½ to ¾ cent a yard during March. Fall River made the largest sales recorded in four months and at the end of the month the stocks in hand comprised less than 200,000 pieces of all sorts of odd counts distributed among 70 mills. Such a dearth of stocks in first hands has never been known in that market, many mills having sold goods they had stored in out-of-the-way places for years and had marked off their books. The story is told of one manufacturer who sold five bales of twills at 46 cents per pound that cost originally 32 cents and had carried unbooked in the warehouse for four years.

Printed goods have sold in a very large way for future delivery, staple prints in odd constructions having been advanced ¼ cent a yard a few days after the fall prices were named. Percales were offered at the high spot prices current for spring and the fall business came in so freely that some of the large lines were quickly withdrawn, the printers having taken all the business they could handle. The trade in printed shirtings, both in low priced and high priced goods was broadly active especially with shirt manufacturers, and these goods were advanced from ½ to 1 cent a yard and finally withdrawn from sale by many mills.

The printers have all the work in hand that they can do. Much of it is for job purposes and a great deal of it on goods destined for foreign markets. There has been a large demand for black and black and white prints as well as for the staple goods. The demands of the printers for print cloths were exceedingly large yet most of these concerns bought less freely for late delivery than they did for delivery through July. At the close of March print cloth markets were very closely sold for any delivery up to July, Fall River mills having contracted for about 60 per cent of their possible output for that time. With the normal spot business to look forward to, it will be seen that the mills are in an exceptionally well sold position.

At the end of the month it was made clear that the government demands would be very large and would increase for some time. A new phase of this trading developed in the last days of the month when it was announced that a committee of manufacturers and selling agents had been appointed in conjunction with the committee on National Defense and preparations were underway to establish in a scientific way just what production may be relied upon for government needs. This will obviate the possibility of a great deal of speculation in the market when government needs begin to broaden and the inevitable change comes in production from peace time merchandise to war necessities, such as duck, sheetings, hospital supplies, etc.

A similar action has been taken in the matter of knit goods and during this month the producing and distributing forces will be coordinated in a way to bring about an easy readjustment of mill products to current requirements, for war. It is accepted by many New England manufacturers that it will become necessary to discontinue many products that are now sold freely for dress goods and other purposes, merchandise that depends largely upon a style demand. There does not seem to be much prospect that this change will become widely apparent until after larger financial demands for war become imperative and a restriction of financial calls for industries occurs. Such a change is in prospect and most New England manufacturers expect to see definite signs of it by the early fall. This is one reason why a check has been placed upon the speculative tendencies of some buyers looking ahead to spring 1918.

The colored goods situation is the strongest that has ever been known in New England. Staple ginghams have reached a price level of 10 cents a yard and buyers are operating on that level. Dress ginghams for quick delivery are scarce and all the colored goods mills and all colored shirtings and waistings are wanted far in excess of what the mills can supply for the time being.

Mills making wide sheetings and other goods of a strictly domestic character have been finding costs advancing so fast that it has been necessary to lift prices again. Pepperel wide sheetings are now on a basis of 32½ cents for 10-4 goods, the highest net price yet reached on goods of this character. Mohawk wide sheetings are at 35 cents and it is expected that Pequot and other high cost goods will go at least to a 40 cent basis. There has been a great deal of business done in the past month or two on specialty cloths for manufacturing purposes, some staples and some of colored yarns. Twills, jeans, and goods available for khaki dyeing to be used in uniforms for army and civil needs have been called for in a large way. The vogue of overalls or slip overs for women has brought forward a large demand

for special cloths for this purpose slightly heavier than gingham, yet lighter than denims.

The tire yarn business and tire fabric production have received a further impetus through the rise in cotton and the demand for supplies for government purposes. It is roughly estimated that at least a million new spindles for tire yarn production will be added in this country within 18 months and a large part of it will be added in the New England territory. The demand for combed yarns has been so persistent that many fine cloth mills have taken million pound lots of tire yarns and are working on them to the exclusion of cloth business. For single 23's combed, yarn buyers have been willing to pay as high as 58 cents and 60 cents a pound, while cloths made from yarns of about this average are bringing in the market only 51 cents in the gray. Many cloth mills are running their carding and yarn departments at night and still have looms idle.

There has been a good business done on towels, bedspreads, and miscellaneous household specialties for fall delivery at prices well up to the top reached last year.

Lancashire Notes.

BY AN ENGLISH CORRESPONDENT.

There is a tremendous outcry here over the raising of the Indian import duties on cotton goods without a countervailing increase in the excise duty on native manufactures. The import duty had stood at 3½ per cent for upwards of twenty years, but it was just on for revenue purposes only, and in order to avoid any protection of the native manufacturer against his Lancashire competitor, native goods had to bear a corresponding excise duty. When it was recently announced that the import duty was to be raised 4 per cent, and the export duty to remain as before the trade was staggered at the prospect of having imposed upon it what was in effect a protective tariff against Lancashire. While it is true that, at present, the Indian mills do not compete with Lancashire except in the coarser work, the manufacture of finer counts is being developed, and traders have fear that once a tariff is established, they will be progressively excluded from the Indian market. Moreover, the Indian mills are already serious competitors with Lancashire even in the coarser work, a class of trade which is often carried on here at but a small margin of profit. For this trade to have to bear the handicap of a four per cent duty would certainly be a heavy blow.

The duty has been raised to assist the payment of interest on the contribution from India of a £100,000,000 towards the cost of the war. In defending its action in endorsing the action of the Government of India, the home government lays stress on the unanimity of opinion in India against an excise duty on its manufactures. The secretary of state for India, Austen Chamberlain, described this duty to the deputation referred to below as "an open sore." The government points out that, alone among goods imported into India, cotton has been favored by having an excise duty to balance the import duty.

Lancashire feels especially indignant about the new duty on account of its having been brought suddenly into operation during the war, during which, by the terms of the party truce, no controversial issues were to be raised. The late government who last year had before it the question of increasing the duty, had decided that the whole matter should be deferred until after the war, and then be considered in conjunction with the fiscal policy of the Empire as a whole. The whole trade—every section of it—quickly rallied in opposition to the new proposal. Very representative deputations interviewed the prime minister and the secretary of state for India but from neither of the ministers was any satisfaction obtained. Both laid stress on what they called the unanimity of Indian opinion in opposition to the excise duties and the serious consequences which would result from raising them in order to counterbalance the rise in the import duty. When the government brought before the house of commons a resolution authorizing the Indian loan and the financial measure accompaning it, the Lancashire members brought forward an amendment regretting "that the provision for meeting the charges should include an alteration in the established system of duties on cotton goods, thereby throwing an unnecessary burden on the people of India and inevitably causing a controversy between different parts of the Empire, which it was most inexpedient to raise during the war." The amendment received 125 votes against 265 for the government motion. To the latter, however, was added the following addendum, which was carried: "This House at the same time declares its opinion that such changes as are proposed in the Indian budget in the system of Indian cotton duties should be considered afresh when the fiscal relationship of the various parts of the empire to one another and to the rest of the world come to be reviewed at the close of the war." Thus the increase in the duties stands for the present.

Some slight progress has been made in the attempt to obtain government support for the development of the cultivation of cotton within the British Empire. When a deputation waited upon the Board of Trade a few weeks ago, no hope of present financial assistance was held out, but it was suggested that a committee of representatives of the cotton trade and the government should be appointed. This committee has now been formed and under its terms of reference it is to "inquire into the best method of developing the cotton-growing resources of the Empire."

Mr. Percival, the manager of the British Cotton-Growing Association in Nyasaland, is here on leave of absence, and reports that, notwithstanding the withdrawal of labor for military purposes, the prospects for cotton during the coming season are quite good. Prior to last year, cotton had gone out of favor among the European planters of Nyasaland, owing to low prices, but following the increased values of 1916 there came an improvement and it is expected that the planters will increase their acreage for the coming season. A considerable increase in the native cultivation is anticipated in Chiromo, and the West Shire and Port Herald districts. The quality of the cotton grown during the past season was not so good, owing to unfavorable climatic conditions and unusual pests, including the cotton-leaf beetle and four kinds of boll worm. Generally speaking, the prospects of the coming season are equal to if not better, than those of any previous year. With the construction of more railways there are prospects of a substantial increase in the native crop.

Cotton Comment.

BY H. AND B. BEER.

New Orleans, April 14th, 1917.

Influenced by unfavorable weather for preparing for the new crop, west as well as east of the Mississippi river, and an urgent spot demand, due to America entering the European war on the side of the Allies, the market showed a further advance of about 2 cents per pound, or $10 per bale compared with one month ago.

There were further general, heavy rains east of the Mississippi river, delaying farm work, necessarily making the start a late one in that section. In the western half of the belt there was some rain, but the precipitation was insufficient in Texas, and temperatures were unseasonably low.

The final determination of the United States to enter the war because of Germany destroying American shipping has stimulated the trade demand, as it is realized that there will be competition for the mill products between the government and the ordinary trade.

Late figures show the world's visible supply of foreign cotton to be only 839,000 bales vs. 1,672,000 last year, of American only 3,418,000 vs. 3,886,000, of all kinds, 4,358,000 against 5,559,000.

While the statistical position of the staple is very bullish at present, indications are that prospective developments eventually will be more so, as the South has less cotton to market than came into sight after this date last year by about 500,000 bales.

Incidentally the position in New York is very strong, as the warehouse stock there is about 40,000 bales less than it was on March 1st, while the certificated, ready for delivery on contracts, is only about half as large as it was one month ago when shorts in March were squeezed.

There is thought to be outstanding a large short interest in May, representing speculation and hedges, and as spots in the South are relatively higher than New York contracts, the situation is one to make shorts nervous.

Wet weather in the central and eastern portions of the cotton region during the winter prevented the necessary farm work to put land in good shape for planting, while drouthy conditions over the greater portion of Texas delayed plowing and sowing of the seed in that state.

There has been a large exodus of negroes from the South during the past six months, the attraction being higher wages in the industrial centers to meet the high cost of living.

The mobolizing of a large army and navy by the United States is expected to disorganize labor all the more in the cotton region, and the demand from the industrial centers will likely become more urgent for labor for the making of ammunition, etc. All this has a bearing on the prospects for the next crop, because without sufficient farm hands, the cultivation of a record acreage is hardly possible.

Another feature of the situation is the interest that the Federal and State governments are taking in the campaign to urge the farmers of the South to plant larger food crops at the expense of cotton.

There promises to be some increase in the acreage west of the Mississippi river, particularly in Oklahoma and Texas, but the increase, if any, east of the Mississippi river will likely be small, as it is stated that there will be a good decrease in Alabama owing to the boll weevils.

The season for showery weather in the Mississippi valley and south Atlantic states is now at hand. There has been no chance for the laying of a good foundation for the new crop in those sections, and as the rainfall during May in the eastern half of the belt is usually the heaviest of any month of the year, a wet May would probably make prospects for the new crop less favorable still. This was the situation which the trade was confronted with in the earlier part of the month, and it is not surprising to witness such a strong market, since the world's visible and invisible stocks will likely be reduced to the point of exhaustion by the end of July, making the world rely upon the new crop for next season's requirements which are expected to be large.

During March American mills consumed 602,000 bales of lint and 73,000 bales of linters, or a total of 675,000 bales vs. 694,000 last year, which included 614,000 bales of lint and 80,000 bales of linters.

From August 1st to the close of March the consumption in the United States was 4,517,000 bales of lint, 547,000 linters, or a total of 5,064,000 bales, compared with 4,636,000 for same period last season, which included 606,000 linters and 4,230,000 lint.

The smaller consumption last month than in March last year, notwithstanding active spindles being 33,233,000 vs. 32,028,000 last year, was due to there having been 5 Sundays in March this year against 4 last year.

As a matter of fact, day for day, the consumption of lint cotton in America last month was larger than for March last year, figuring 23,154 bales against 22,740. If there had been as many working days in March this year as there was last year, consumption of lint cotton in America last month would have been 625,000 bales vs. 614,000 last year.

American mill stocks at the end of March were 2,043,000 bales against 1,979,000 last year, and stocks in public storage were 2,906,000 vs. 3,407,000.

American mills continue to take less cotton than they are consuming. Their stocks on March 31st were only 69,000 larger than on corresponding date last year, whereas they were 182,000 larger than one year ago at the close of February. By the end of April they will likely be smaller than last season.

Stocks in public storage in the United States at close of March were 354,000 smaller than last year. Today the South has about 300,000 bales less to market than came into sight after this date one year ago.

Liverpool's stock and afloat of all kinds is 832,000 bales, last year 1,013,000, of which 672,000 is American vs. 766,000.

The world's visible supply of all kinds is 4,187,000, last year 5,370,000, year before last 7,414,000, of which 3,262,000 is American vs. 3,701,000 last year and 5,652,000 in 1915, of foreign 925,000 against 1,669,000 and 1,761,000.

Announcement has been made by the Signode System, Inc., of 106 West Lake St., Chicago, Ill., that their business having increased much more rapidly than could have been anticipated, has necessitated their moving into much larger quarters at the address just given. In this new establishment they are excellently equipped and prepared to serve the additional influx of customers.

The Yarn Market.

The yarn market for the past month has indicated plenty of inquiry, but with comparatively light buying as far as the Philadelphia market is concerned. The close of March was slow, and it was the buying from the East that was holding the market strong. Bulls were predicting that cotton prices would go higher and that yarn prices would advance in sympathy, but knitters in need of yarn were buying what was absolutely necessary to fill immediate demands and waiting patiently for something to turn up or to turn down insofar as prices were concerned. There was some improvement in the demand for single combed yarns on cones, both hosiery and underwear manufacturers being in the market. Some sales of 25,000 to 50,000 pounds were recorded, but there was a wide variation in the prices quoted and those at which some of the sales were made. Some southern frame spun combed peeler was quoted as low as 42 cents and others as high as 46 cents on the basis of 10's for coarse numbers.

There were plenty of inquiries received from local manufacturers around Philadelphia during the opening of April, but the war situation seemed to have put some parts of the country into an unsettled state and this seemed to affect hosiery and underwear orders to some extent. Particularly is this true of the far west and the Pacific coast. Some of the sales reported during this period were Eastern 16's, 18's and 22's combed peeler on cones on the basis of 52½ cents for 10's. 30's cones brought 55 to 60 cents, and 36's cones 66½ to 67 cents. Southern frame spun 18's cones, ran from 45½ to 47 cents, 24's cones brought 49 and 49½ cents. 40's were sold at 68 cents; 70's cones for 95 cents; but the improvement in the demand for combed yarns did not seem to extend to the 2-ply's in the Philadelphia market, and the prices on these were not materially advanced. Inquiries for carded yarns on cones for both prompt and future deliveries were received, but the prices being quoted seemed to frighten the great majority, as nothing was done in the line of sales. Spinners were quoting Southern frame spun carded cones at 33½ to 36 cents basis of 10's, and in many instances were refusing to sell for less than their quoted price. Weaving yarns were rather slow during this part of the month.

Later in the month business in the yarn market seemed to be spotty, and predictions were being freely made that cotton futures would sell at 25 cents before there would be any reaction in the price, and the feeling seemed to be also that yarn prices would go up to correspond.

There was a good demand for single combed yarns on cones, and inquiries were received in the latter part of the month for 25,000 to 200,000 pounds for future deliveries. Spinners were quoting very high prices and there were some sales.

There was not much change in the 2-ply combed yarn situation, although prices continued to vary widely. A good many seemed to be of the opinion that combed mercerized yarns are coming back, and there was a moderate demand for carded yarn on cones for fall and winter deliveries. Some spinners are declining to quote carded and combed yarns on cones for delivery after October until they can see further what the cotton market is going to do. Following are recent quotations from the Philadelphia market:

Southern Single Skeins.

8s	31 @31½	10s	32 @32½
12s	32½ @33	14s	33 @33½
16s	33½ @34	20s	36½ @37
24s	38 @38½	26s	38½ @39
30s	43 @43½		

Southern Single Warps.

8s	31½ @32	10s	32½ @33
12s	33½ @34	14s	34 @34½
16s	34½ @35	20s	37 @37½
26s	39 @39½	30s	43½ @44
40s	50 @55		

Carpet and Upholstery Yarns in Skeins.

8-4 slack	32 @32½	9-4 slack	32½ @33
8-3-4 hard twist	29½ @30½		

Southern Two-Ply Skeins.

8s	32½ @33	10s	33½ @34
12s	34½ @35	14s	35½ @36
16s	36 @36½	20s	37½ @38½
24s	41½ @42	26s	42 @42½
30s	45 @45½	40s	56 @58
50s	66 @67	60s	75½ @78½

Southern Two-Ply Warps.

8s	33 @33½	10s	33½ @34
12s	34½ @35	14s	36 @36½
16s	36½ @37	20s	38½ @39
24s	41½ @42	26s	42 @42½
30s	45½ @46	40s	57 @58
50s	67 @68		

Northern Two-Ply Carded Peeler Skeins.

20s	39½ @40	24s	43 @43½
26s	43½ @44	30s	46 @47
36s	55 @56	40s	59 @60
50s	68 @69		

Two-Ply Combed Peeler Skeins.

20s	50 @51	24s	54 @55
30s	63 @64	40s	67 @69
50s	75 @76	60s	85 @86
70s	95 @96	80s	$1.10@$1.20

Southern Frame Spun Yarn on Cones.

8s	34½ @35	10s	35½ @36
12s	36 @36½	14s	36½ @37
16s	37 @37½	18s	38 @38½
20s	38½ @39	24s	41½ @42
26s	42 @43	30s	46 @47
40s	53 @55	24s tying in	39 @39½
30s tying in	42 @43		

Northern Mule Spun Carded Yarn on Cones.

10s	37½ @38	12s	38 @38½
14s	38½ @39	16s	39 @39½
20s	40½ @41	24s	44 @44½
26s	45 @45½	30s	49½ @50
40s	57½ @58½		

Northern Mule Spun Combed Peeler Yarn on Cones.

10s	51 @52	12s	52 @53
14s	53 @54	16s	54 @55
20s	56 @57	24s	58 @58½
24s	58 @58½	26s	59 @59½
30s	60 @61	36s	65 @66
40s	68 @70		

The B. F. Goodrich Company recently announced an important change in the personnel of its officials which brings L. D. Brown, who has been cashier of the First-Second National Bank of Akron, into the office of treasurer, succeeding W. A. Means. Mr. Means was elected second vice-president of the Goodrich Company at the annual meeting, March fourteenth, and at the same time, Mr. Brown's appointment as treasurer was confirmed.

For almost twenty years Mr. Means has been associated with the Goodrich Company and during that time he has seen it grow from a comparatively small plant with a $2,000,000 capitalization, to the ninety million dollar institution of today, which is rated as the largest of its kind in the world. For the past seven years Mr. Means has occupied the office of treasurer and for twelve years previous to that was assistant-treasurer. This experience has qualified Mr. Means for the new responsibilities which the second vice-president is obliged to handle, for it has been during the past twenty years that the rubber business has seen the greatest growth and development.

COTTON MANUFACTURING.

Designs for Fancy Cotton Fabrics.

BY T. WOODHOUSE AND J. IRELAND.

PART THIRTY-SIX.

The cloth reproduced photographically in Fig. 159 is very simple in construction, elegant in appearance, and capable of being woven with a comparatively small number of harnesses. All the yarn is again pure white, and the pattern is a combination of stripes and spots. In the finished cloth there are 92 threads per inch and 75 picks per inch. One unit of the design on 48 threads and 32 picks is given at *A*, Fig. 160, and this clearly represents four stripes of the cloth, i.e., two perfectly plain stripes of 13 threads each alternating with two spot and rib stripes of 11 threads each. There are really 17 threads working plain on two harnesses between the spots, but it will be seen that when the design is properly divided, the natural division is 13 for the plain stripe and 11 for the spot and rib stripe. The spots are arranged in diamond or plain weave order, or in what is often termed a drop pattern.

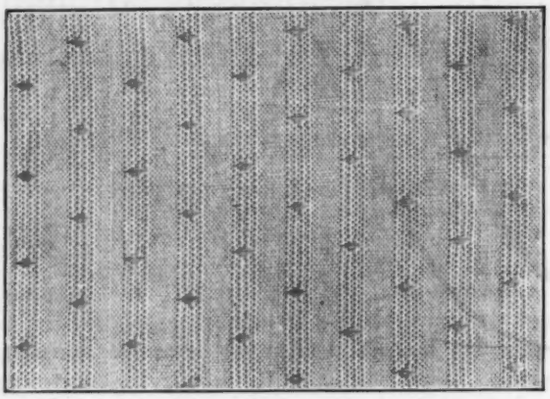


FIG. 159.

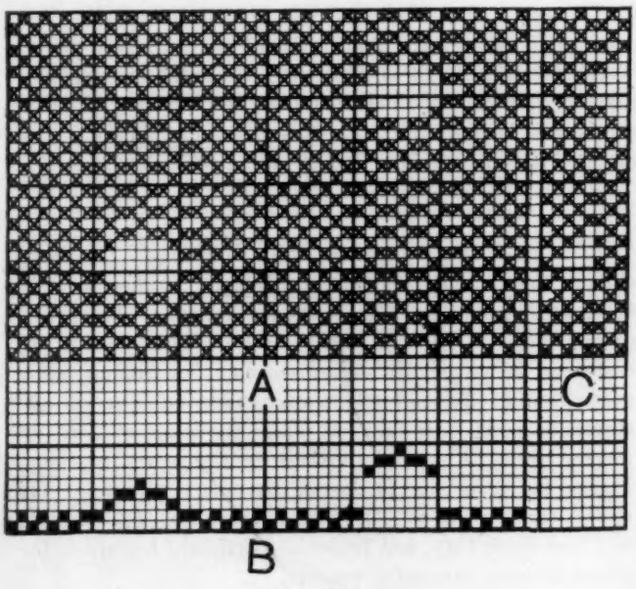


FIG. 160.

The draft at *B*, Fig. 160, shows that 8 harnesses only are required to weave the cloth, although it may be considered advisable to employ 4 harnesses instead of 2 for the plain threads. If 2 harnesses only are used for the plain threads, then the weaving plan would be as stated on 8 harnesses and 32 picks as shown at *C*, whereas if 4 plain harnesses are used, the first two would naturally be repeated for the weaving plan, and 10 harnesses in all would be necessary.

The spot and rib effect is very effective, and the rib is obtained by the simple device of making two of the three consecutive threads weave together in plain order, and the remaining thread to weave in the oposite plain order.

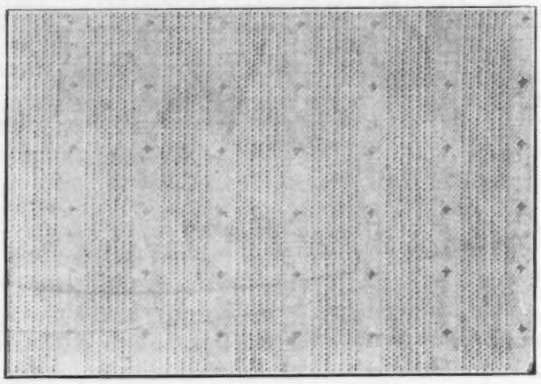


FIG. 161.

Another cloth of a somewhat similar construction is that illustrated in Fig. 161, but in this case the spots are all in the same order and on the plain stripe. It will thus be seen that two stripes, a rib stripe and a spot stripe, complete the pattern. The combined plain and spot stripe occupies 13 threads, while the rib stripe is on 20 threads, making altogether 33 as illustrated at *D*, Fig. 162. This shows one complete unit of the design and it requires 24 picks of filling. The ribs are made in the 2 and 1 order, precisely as those in the previous example. With the draft on the minimum number as at *E*, Fig. 162, it will be seen

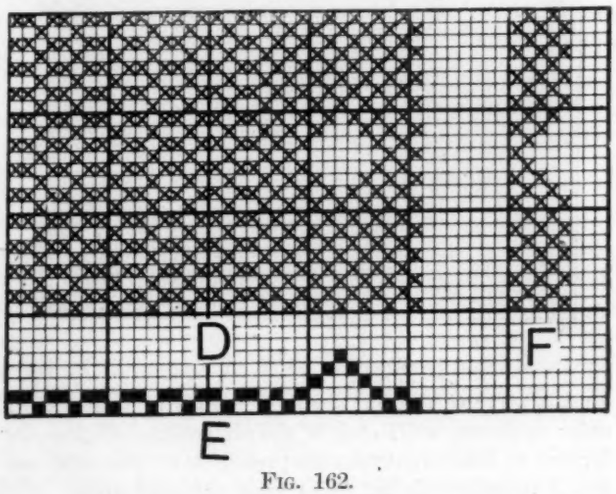


FIG. 162.

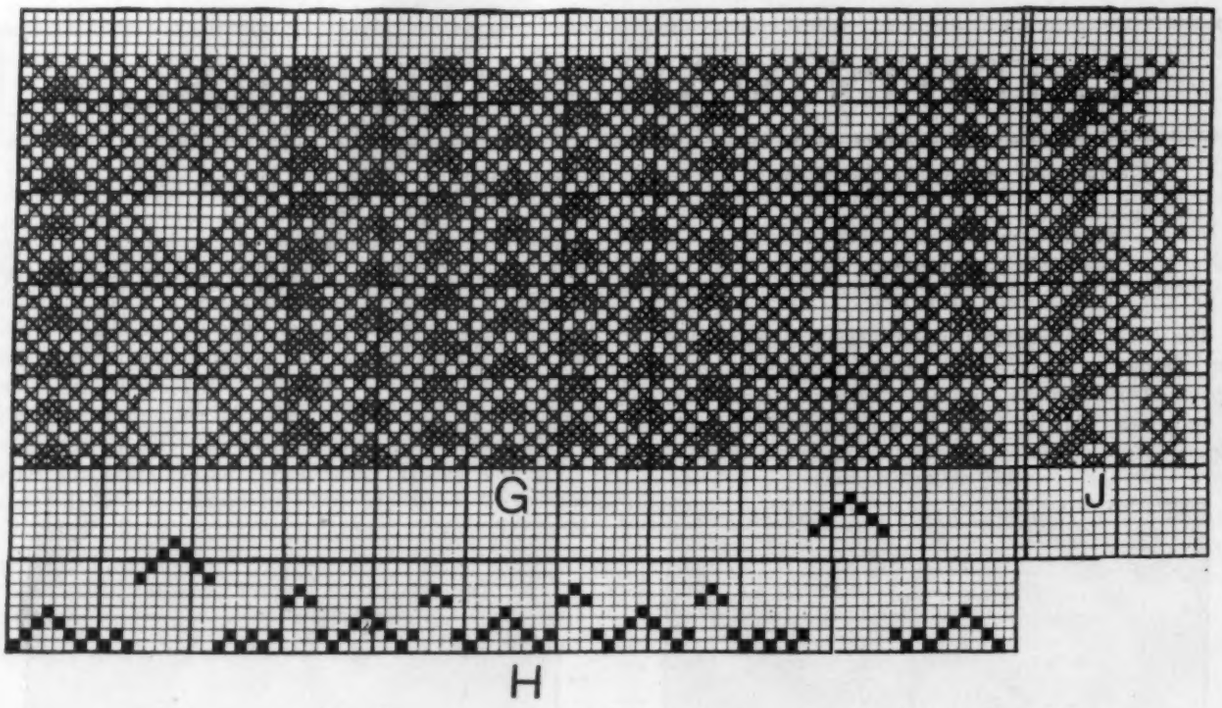


FIG. 164.

that 5 harnesses only are required, and that the weaving plan is on 5 by 24 as exemplified at *F*. In the finished state the cloth contains 84 threads per inch of white warp and 75 picks per inch of white filling.

A stripe effect of a rather more complicated nature appears in the cloth which is photographically reproduced in Fig. 163. The general appearance is that of a compound broad stripe of a Bedford cord nature—seven prominent narrow stripes—alternating with a narrower plain stripe upon which is developed a small diamond figure in filling.

In the alternate plain and spot stripes, the small diamond figures are again on the drop or plain weave base. In the broad stripe, each of the seven prominent stripes

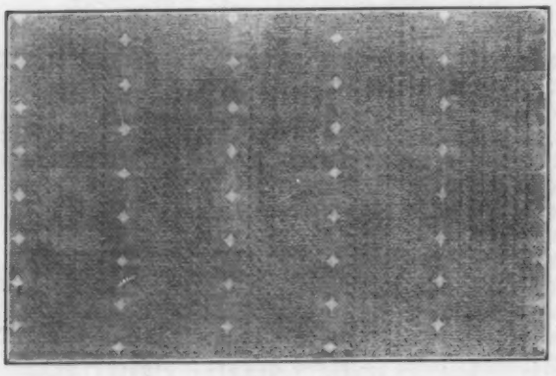


FIG. 163.

consists of three threads which interweave in 3 up 1 down order as shown, while each of the six subdued stripes—the furrows or hollows between the prominent stripes—also consist of three threads but which work perfectly plain.

In one complete unit of the design, consisting of two broad Bedford cord stripes and two plain and spot stripes, there are 116 threads and 36 picks. In design *G*, Fig. 164, however, only part of the unit design is illustrated. The two plain and spot stripes, and one of the Bedford cord stripes are given entire, but the alternate Bedford cord stripe, which is identical in structure with, but differing in some parts in the starting of the floats from that shown in the middle of the design *G*, Fig. 164, is represented at the two ends of the design by the first and last rib of the stripe. It is obvious that this is sufficient to enable the reader to follow the structure.

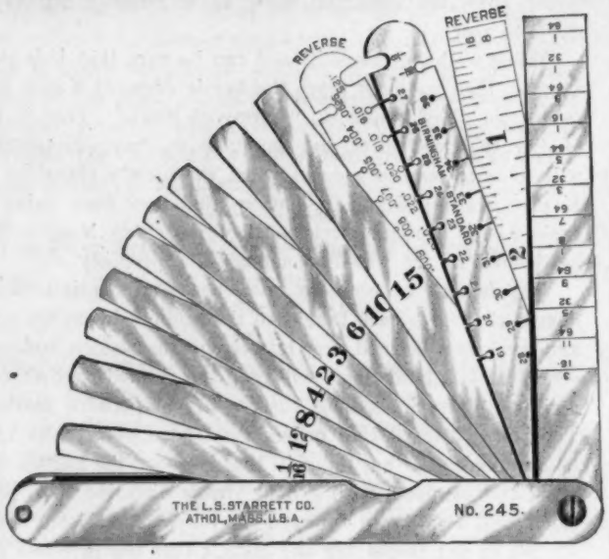
The central part of each spot and plain stripe requires 4 harnesses, while two harnesses are necessary for the perfectly plain edges of these stripes; the same two harnesses can be used for the plain threads in both the Bedford cord stripes, but 4 harnesses, 2 for each stripe, are necessary for the 3 up 1 down floating threads. Hence, in all, a minimum of 14 harnesses are required. The draft is at *H*, while the weaving plan, on 36 picks, is shown at *J*.

The two spot and plain stripes combined repeat on 18 picks, and each of the Bedford cord stripes repeat on 4 picks; consequently it is necessary, to extend the weaving plan to 36 picks in order that both sections may appear continuous in the cloth. In this particular fabric there are 104 threads per inch and 68 filling picks per inch.

(To be continued.)

"The proof of the pudding lies in the eating." The principle of this old adage is true to this day. Nowhere does it find better application than in the textile trade. The proof of any piece of goods is in the service it gives; a host of customers is its greatest advertisement. To produce such goods successfully the textile manufacturer relies on certain staples on which he in turn has placed the badge of merit by placing them as standard articles in shops and machine. Lancashire acme size is one of the many staples of the textile trade made by The Arabol Mfg. Co., 100 William St., New York City, and found as a standard feature in the shops of many successful weavers.

Special Cotton Mill Gauge Free—



for a few minutes of your time.

The taper gauge shows the thickness in 64ths to 1/16ths of an inch on one side, and on the reverse side is graduated as a rule three inches of its length, reading in 8ths and 16ths of an inch.

The wire gauge, English Standard, shows on one side sizes numbered from 19 to 36, with two extra slots, one 1/16, the other 1/8 on an inch, and on the other side shows the decimal equivalents expressed in thousandths. This gage has also 9 thickness or feeler gage leaves, approximately 4 inches long, of the following thicknesses: .002, .003, .004, .006, 008, 010, .012, .015 and 1/16th of an inch all folded within the case, which is 4¾ inches long, convenient to handle or to carry in the pocket.

Our Service Department desires the opinions of active mill men on the quality of the work shown in the advertising pages of this issue of COTTON.

We are, therefore, going to give this gauge for the best letter by a mill executive who gives the clearest and most definite reasons why, and in what maner, any certain advertisement is, in his opinion, the best.

Contestants must be mill executives, from overseers to presidents, connected with spinning. weaving, knitting, or finishing plants. The letter must be accompanied by the name, address and official position of the writer in order to be eligible, and must reach this office not later than the first of the month succeeding the date of issue.

The judges will be the Editor of COTTON and the Manager of the Service Department, whose decision will be final. The name of winning contestant will be announced in COTTON'S pages.

Address Contest Department of COTTON, Atlanta, Georgia.

The winner of the advertising contest for the March number was George H. Gilligan of New Bedford, Mass.

The Winning Letter.

EDITOR COTTON:

In my opinion, the advertisement of the General Electric Co., on page 33 of the March issue is the best. .

The reason why it is the best is that it is not unlike our great telephone system in its magnitude in reaching each and every individual in every field wherein power is used or required.

Not only does it appeal to the manufacturer, but to the architect, the engineer, and others as well, who are in any way connected with the great commercial industries of today. Each is able to see at a glance that which most interests him in his own particular line of work, wherein power and its transmission is a most important factor.

These facts are demonstrated by the varied illustrations backed by the text matter descriptive of G-E service.

George H. Gilligan,
Overseer of Finishing,
New Manomet Mill No. 3,
New Bedford, Mass.

New Bedford, Mass., April 9, 1917.

EDITOR COTTON:

I am in receipt of your letter and gauge this morning and I can assure you I am much pleased with both, and I consider myself quite fortunate.

Will say that for many years I have subscribed for a number of textile papers, and have now limited my subscription to COTTON only. This in itself shows to you what COTTON means to me as an inside man.

Thanking you, I am,

Very respectfully,
(Signed) Geo. H. Gilligan.

Because of its peculiar interest and the unique manner in which it was written, it was decided to award a second prize in the March contest in the form of a check for $2.00 to J. F. Broom, Overseer Carding and Spinning at the Riverside Cotton Mills, Danville, Va. His letter will be found in the department entitled "How Other Men Manage."

TYRIAN PURPLE.—The knowledge and employment of this dye, extracted from shell fish, has usually been attributed to the Phœnicians. According to a paper read by J. W. Jackson to the Manchester Literary and Philosophical Society, late research shows that it was known to the Minoans of Crete in 1600 B. C. The Phœnicians spread the art along the Mediterranean. There is evidence that the dye was used also in north-west Africa, the British Isles, the Malay region, China, Japan, and especially in Mexico and Central America, where it has survived among the Indians since pre-Columbian times.

The man who can acknowledge his misfortunes without blaming them on other people has true courage.

The Training of Textile Operatives.

BY A. H. GUILLIVER.

When the hands in a plant have received sufficient instructions so that the work of the room will proceed in an orderly and expeditious manner, and the machines will receive a sufficient amount of material in the order of production, and the rooms will keep each other supplied with the stock required to insure full production and commendation from the executives, there is another progressive step that should be taken.

Develop the skill of the individual employee so that he or she shall be a working factor in all the regular and increased demands for production that may be made. In studying this point of efficient management the same factors enter that are needed in the preliminary training. All individuals are not capable of developing the same amount of skill, often you cannot make an efficient weaver out of a very capable mechanic. One requires the delicacy of touch that will sense troubles with the warp threads by the handling of the fingers almost without the use of the eyes, but he does not need the trained strength of even steady strokes of the chisel or the hammer.

Skill may be divided into several kinds: first, "Inherited"—that which comes to each one of us from our line of descent. This is the easiest to see and perhaps the most permanent to employ. As the long training from grandfather to father to grandson rendered the Lancashire cotton industry for many years an unequalled place in the manufacture of textiles, so has the skill of the pioneer from the time of a Daniel Boone up to the present made the western American a power that can be depended upon whenever there are difficulties to be overcome. So must we use and develop any inherited skill that each hand in a cotton mill may have. It is well to find out all that can be learned by the use of the eyes and by well pondered questions of the reasons why to some of the workers the easy manipulation of their various tasks comes so readily. If the work that one is doing shows that the least amount of time and the smallest number of motions will secure the largest amount of work accomplished and the greatest time to rest, perhaps it is advisable to use this inherited skill by giving this employee a chance to help the work in the room as well as his earnings by using this skill in more difficult operations.

Again we find that a hand who has acquired dexterity in making the machine do its work well and continuously—has developed this facility. This is done by the second way of obtaining skill, namely, "Acquired Skill." This has shown in the past in New England among those who have come from the farms of Canada to secure the money required to develop the land already owned or to secure the money required to obtain a home of their own. We can find anywhere we look the farmer's need to solve difficulties with poor tools and little assistance and this has given these people a dexterity in solving problems that come up in operating the various mechanical appliances in the mill.

Let us watch for this among all the employees and do our best to cultivate it and reward the worker. On it depends the success of all the machinery operations. It makes of the plant a working unit and not a number of widely separated efforts. We must gain it for our hands, every means must be used for them to acquire it. It is the one thing that makes the older well organized mills of the larger cities the goal that those more recently organized strive to reach.

When we have this skill and can be sure that it is permanent, then we must move the hands forward a step and secure the third requisite, "Improved Skill." That is the quality that will meet and vanquish the competition that will come to our very doors when the bloody slaughter in Europe is stopped and the nations that have been flying at each other's throats meet as they must ere long on the battlefields of the world's commercial supremacy.

The lessons of economy, patience, and continuous endeavor that have been taught to the soldiers in the trenches and have been learned very bitterly by the women and noncombattants left at home will reap the reward that all such training gives, immediate success in competitive markets. They have learned that orders must be obeyed, rules must be observed, and that the skill that has won the battles with rifles and cannons, with skilled brains directing the operations, will also forge forward on the battlefields of trade.

Let us not forget for one instant that the priceless possession of every individual, his or her experience, is the one thing that friends or foes cannot deprive us of using, and that this is the capital by which the wastes of war will be obliterated.

Right here we come to the last of these rewards that skill will give, "Improved Skill." That is the cornerstone that made the country of Belgium the envy of her neighbors and the football of this sanguinary struggle. She had held before her people both as a state and as individuals, that success is only maintained by making what is manufactured as well as it can be made, and that this is not the end, but the maker must continue to improve and let each year's product be superior to the year preceding.

That is what we must do with our plants here, progress from one period to another, never for one instant believing that the future holds out no better way to perform the work of our machines or of our hands. If our new customers which we have acquired in the markets of our competitors, have from necessity taken our products let us not lose them by any slackness in furnishing them the better articles that improved skill can give them.

Long experience and thorough training are the only cornerstones of success, there is only a temporary quality in the youthful enthusiasm of the energetic type. His motto is we will let our mistakes be forgotten in the amount and cheapness of the product that we will turn out the next month or the next quarter.

Experience is costly to the individual as well as to the corporation, and we must have the organized establishment with its employees thoroughly understanding that the goal sought is *skill*, whether by using that which comes by birth and lineage, or that which is secured by earnest work and carefully performing the daily tasks of hands and bodies. That, when this is improved by constant watchfulness and the seeking of new methods of doing the work assigned, and then moulded into an irresistable engine of progress by securing the steady maintenance of this progress by careful supervision and cooperation of each worker, only then can we be sure that our manufacture of textiles is on the high plane of continued success. We can then know that no alarm will have any effect on the value of our

investment either in buildings, machinery or organization of workmen.

Let us put this ideal before us as we work from day to day in our several fields of labor; let us feel that the poor work of the laborer that simply moves our stock from room to room has the same effect of throwing the whole scheme of the plant out of balance as does the breaking of the engine which furnishes the motive power, or the machine that spins the thread to be woven into the fabrics on which the reputation of the plant is founded.

A Few Practical Hints About Fly Frames.

BY GEORGE S. BROWN.

One thing that every carding overseer should look out for is to keep every spindle on his slubbers, intermediates and roving frames producing. It takes but a little carelessness in this way to have the spinning room waiting for roving. Every loose or worn bolster gear or spindle gear, or bent or broken flyer, or, in fact, anything that causes an end to be broken back, should be reported by the tender at once and immediately fixed. In some cases the fixer, or second hand, is too busy to attend to the trouble at that very moment and lets the spindle wait. Before the end of the week there may be a dozen stopped, and a dozen spindles on coarse work mean a good many pounds production lost. More than that, the frame operators are generally paid by the clock hanks, and if there are, say, but 58 spindles running on a 60-spindle slubber, the operating cost has been increased. Just consider for a moment the loss in production in a 12-inch slubber running on .43 hank roving, two spindles stopped all day. Eleven doffs for the day at 2½ pounds per spindle per doff, means that each spindle turns off for the day 27½ pounds. Two spindles stopped causes a loss of 55 pounds in a day. Worth looking after? Rather.

A strict rule should be enforced by the overseer that once a day the fixer should make it a special object to look at every frame under his supervision to straighten out every little trouble about the spindles.

There is nothing much more disagreeable, when a frame is started, than to hear a couple of flyers striking together. The trouble is generally caused by the spreading of a flyer leg. If this is not found to be so, then it will probably be a spindle out of plumb, letting it slant towards the spindle at the right or left. The tender will turn this spindle quarter way round, and it will run till the next doff without striking. When the frame is again doffed the flyer will be turned back into its proper place by the doffer, and the same performance repeated. If not speedily remedied this will destroy both flyers and pressers. And these parts are costly.

Sometimes the pins in the flyers are too thick to allow the flyer to properly drop down—the pin not entering the slot in the spindle. Or perhaps the spindle slots are filled with waste or dirt, which will cause the same trouble. In a case like this tenders are very prone to rap these flyers down into place, and thereby bruise their noses, causing a rough spot, which will chafe the roving when the frame is started.

Flyers with battered noses should be remedied as follows: When the frame is running, break back the end where the damaged flyer is and apply a coarse file to the roughened nose. This will cut away the unevenness; then finish off with a fine file, finally polishing with fine emery cloth. The finishing touches can be put on by pressing a piece of waste filled with graphite against the nose of the flyer. Flyers should be perfectly smooth. Rough-nosed flyers produce bunchy work.

After every doff, have all loose pieces of cotton picked from the flyers before starting the frame. Frequently a plug of waste gets stuck in the hollow leg and puts so much friction on the roving passing through that it causes the end to run slack between the front roll and the spindle. Also impress upon the minds of tenders the importance of having the correct number of turns around the presser and to have the same number around each and every one. One turn left off will cause a soft bobbin to be built of larger diameter than on the other spindles. Before the set is half full this large diameter bobbin will be running at so great a tension that the end will snap and have to be broken back until the frame is doffed.

Around coarse fly frames there will necessarily be a good deal of waste produced by flyings, broken ends, etc. This waste is always falling down back of the frames and getting into the gears and racks. This is very noticeable in the tension rack. A small bit of waste clogging this rack will cause the frame to run over and break down all the ends. This means delay and loss of production, not counting the hard piecings for the spinner to handle.

Lifter racks will get filled with this waste, but the trouble is not so quickly noticed as with the tension rack. The waste will pack into these lifter racks and gears almost as hard as iron, making them run exceedingly hard, and finally the teeth of the racks, or gears, or both, will be broken or forced out of gear. The carriage will stop its traverse and a ridge will be made on the bobbins. It is no ten-minute job to put on a new lifter gear (especially at the head of the frame), level up the carriage, piece up the ends, and get the frame running. Besides the loss in production, the whole frame has received a severe strain and it is not infrequent that within the next few days a couple more breakdowns will occur on the same frame on account of the first break. Once a month at least these racks should be gone over and all waste picked out of them.

Stop a fly frame on the change with the carriage at its lowest point. Take hold of the driving pulley with both hands and see if you can turn it. Maybe you can, but very likely you cannot. Nevertheless, if a fly frame is in good condition one should be able to turn it easily with one hand, no matter where the carriage happens to be. The two main causes of this running hard when the carriage is down is tight spindles and spindles out of plumb with their steps. You may be able to lift every spindle out of its step when the carriage is up, but with it down you will probably find a third or more spindles immovable. To remedy this: Doff the frame; remove the flyers, leaving the spindles bare. If the carriage is down, throw out the lifter gear and run the carriage up by hand. The tight spindles will rise with the carriage. Take out all the spindles and after cleaning out the bolsters, wipe the spindles perfectly dry. Now replace the spindles and plumb them with their steps. Run the carriage to its lowest point and *plumb the spindles again.* See that all the steps are properly oiled and then replace the spindle gears. Oil the

bolster gears, but do not put a drop into the bolsters. When the frame is started it will run on a quarter belt.

Regarding the statement of not putting oil in the bolsters, I wish to repeat it. It may be claimed that the bolsters will be worn out in less than two months' time. However, if you have plumbed the spindles correctly the bolsters will not be worn out. Put your finger on a spindle that is out of plumb and you will feel a strong vibration. Try the same thing with a spindle that is plumb and you *do not* feel any vibration. The vibration is caused by friction on the sides of the bolster. A truly plumb, or very nearly plumb, spindle produces almost no friction at all in the bolster, and where there is no friction there is no wear. If oil is put into the bolster the flying lint collects on the sticky spindle, and at every change of the carriage this lint is packed into the interior of the bolster until the spindle sticks.

A real tight spindle will do more damage to a frame in one change than would occur by natural wear for two years. With no oil in the bolsters the spindles will never get stuck, and as to the wearing of the bolsters, I know of a pair of 10-inch frames that have not received a drop of oil at these points for over four years. There was never a tight spindle on them, and one could turn the frame by grasping hold of the empty bobbins on the spindles. The bolsters showed no signs of wear—that is, none more than was reasonable to expect for that period.

A word about twist: Twist is a very important item to consider on fly frames. Many overseers, thinking it is the correct thing, make it a rule to run just as little twist as possible. This is all right if they stop at *possible*, but a good many of them go beyond this point and run too little twist. A much better rule to observe would be to run *as much twist* as possible. Production depends not so much upon running little twist as upon running the frames. One end down stops the production of the whole frame. Just a little more twist might have saved that end and kept the frame going. I do not mean to put in excessive twist, but I do mean to use judgement. Soft, spongy, slack twisted roving is a curse to the spinner.

Every carder wishes to turn off a big production, and to do this very often he will speed up this machine and then that machine, leading himself to believe that because his machinery is turning faster there must of necessity be a big increase in production. High speed does not mean large production; it generally means destruction to the machinery and over-worked, discouraged help, turning off inferior work. I have seen a pair of slubbers changed from a 16-inch driving pulley overhead to a 13-inch, and turn off the same number of hanks and better work, while the tender sat down and took it easy. The same rule should be adopted by mill superintendents as is enforced by traffic police: "Speed fiends must be abolished."

Although some parts of a mill may seem insignificant and able to run themselves, it is good policy for no one to deceive himself. If parts of a mill were able to look out for themselves no body would be paid to do it. You are being paid to do something—are you doing it? The best man isn't the one with the most dirt and grease on his face and hands, or the man who can fix a bad smash the quickest. The best man is the one who, by keeping his machinery in the best condition, doesn't have bad smashes. When it comes to promotion nothing need be said.

An Increasing Demand for Tire Fabrics.

Perhaps one of the many uses to which cotton has been put in recent years that will bear most watching is the consumption of long staple in automobile tire fabrics. The production of such fabrics has grown with the automobile industry and, naturally, it is interesting to observe the trend of the demand for the raw cotton used. This season is witnessing a phase of the situation of moment both to cotton growers and the manufacturers. The latter are reported to be buying land in the South for the production of the raw cotton which they consume.

War conditions, the boll weevil and other factors enter into the subject. The first influence is seen in the stoppage of imports of Egyptian cotton to the United States. The boll weevil affects the tire-fabric trade through the limiting of the output of long staple in the Delta regions, where it was formerly grown freely. The prices for Egyptian and Sea Island cottons are another factor which has instigated manufacturers to take a radical step.

Hence we find them seeking lands where they may be assured of the needed supplies to carry on their business. These lands are found in the upper regions of the Delta—in Louisiana and Mississippi—which the boll weevil has not reached. The acquisition of, or negotiation for, tracts of 10,000 and 20,000 acres of the cut-over lands in the Delta regions bears witness to the importance of the new movement which is in progress, not to mention numerous inquiries from cotton consumers for other parcels of land. It is understood, indirectly, that the Goodyear Tire & Rubber Company has large tracts of land in process of cultivation in Arizona. Southern California is also making a bid for a place in the long staple column.

All of the properties mentioned afford opportunity for cultivation of the long staple which is required for auto-tire fabrics. Tire manufacturers are watching the experiments being conducted to produce staple of greater length than grown heretofore in the Delta. The growth of long staple in the Delta, with greater tensile strength than the varieties which compete with it, is a matter to induce manufacturers to take steps to assure themselves of future supplies. Also they have an incentive in the price of such cotton, which has cost 5 to 15 cents per pound less than the other long staples which they have been obliged to use.

Also, in this connection, it is of interest to recall that a tire concern has just begun the manufacture of its own fabric in Louisville, Ky. A mill in Michigan is considering the installation of tire duck looms and a well known organization in South Carolina is spending $1,500,000 in equipping a plant for this class of work.

The growth of the dyestuff companies in Japan has caused an oversupply of certain dyes in the local market. When the war started the local dyers suffered, but the establishment of many companies and the large increase in output flooded the market and a petition has been presented to the Government to cancel the ban on exports. The Government is considering the matter in relation to aniline salts. Black dyes and sulphur dyes are also tending to be overstocked, and these, too, probably will seek an outlet. The chief markets for these articles are Russia, Straits Settlements, and China.

Dyeing, Bleaching and Finishing.

Stretch and Cracked Selvages.

BY WILLIAM B. NANSON.

We have lately been asked to discuss the cause of cracked or broken selvages, which sometimes occur when bleaching cotton piece goods, and the proper methods to pursue for their prevention. It rather curiously happened that about the same time we were asked to give the probable amount of stretch or gain that can be obtained from cotton piece goods by the bleaching process.

These two questions, or, rather, the results they lead to, are so intimately related to each other, a sort of Siamese twins, as it were, being inseparable from each other, that we deem it advisable to answer them both in this article, and make one job of it.

When a selvage "cracks" it may be safely assumed that it does it for two reasons, it is the weakest part of the fabric, and it is the most exposed to the tensional strain of the various bleach-house manipulations. It is the weakest because of various damaging influences brought into play upon it in the weaving operation, and to the fact that it has the support of the fabric at only one edge of it, which makes it the weakest spot in the whole width of the cloth.

It is customary to try and overcome this latter difficulty by using double selvage threads for 8 or 10 ends but this only accentuates the trouble as it causes the selvage to be thicker than the body of the cloth, forming a close tape-like selvage which is, owing to its closer texture, less elastic than the body of the goods, and which is sure to crack if any undue or impulsive strain is brought to bear upon it. For this reason, such cloths as drills, satins, sateens, etc., which are nearly all woven with tape selvages, are very liable to have cracked selvages and the various tensions in the bleaching, scutching and mangling machinery should be carefully watched and regulated. Very light goods are better scutched by hand, i. e., through a tower and over a half moon into the water mangle as in the old system, the scutcher being too severe on the selvages of such goods.

Assuming that the selvages are the weakest and most exposed part of the cloth it will be obvious that the cause of their cracking is the undue stretching of the goods. It may be said, approximately and by way of illustration, that if the body of the goods will safely stretch in length seven per cent, the selvage will stretch safely only four per cent, and, further, that when it has stretched its four per cent, which is as far as it will go, it loses the support of the rest of the fabric, and the whole strain coming on the selvages it is very liable to break, and *will* break or crack when any weak spot in the weaving department or any rough spot or undue strain in the bleach-house is reached.

DAMAGES CAUSED BY POOR WEAVING.

As we have said, many fabrics are made with extra selvage threads in them, or, if not, the resut of poor weaving may so draw the outside threads together as to achieve the same undesirable result. If the shed on the loom is too small where the shuttle enters it in its passage across the race, it has quite a tendency to twist the outside threads, also if the shuttle is too low at the back as the nose of it enters the shed, twisted threads will result; these cause a tight selvage which, being less elastic than the body of the cloth, are liable to crack with any undue strain during bleaching.

A wrong timing of the harnesses will cause a poor selvage. Too large a shed will cause a poor selvage, as it opens out the yarn too much and causes the threads to spread out, making an open space between each two. This is especially noticeable when the filling is near the bottom of the bobbin, the additional friction causes the selvage threads to be drawn in a little, closing up the spaces somewhat between the ends, and a common result is, that as the yarn passes through the temple the filling is broken, causing a small hole in the selvage which, in the subsequent bleaching operations catches in some of the rough places in the peg rails, or poteyes, or scrimp bars, or scutchers and tears or cracks out. Again, if on the other hand, there is not sufficient friction or tension on the filling as it leaves the bobbin it will curl up loose on the selvage and thus gives the selvage no support or strength.

The beauty of a cloth and the perfection of its selvages depends very largely upon the tension at which the warp is held—when it is held too slack in the loom, it presents a very raw, unsightly appearance as to the body of the cloth and an in and out selvage. All descriptions of cloth should be held nearly as tight as the strength of the yarn will permit, but if held too tight, it will not only break the yarn but it gives to the cloth a hard look. A uniform tension must be secured throughout the breadth of the warp, and the warp must be wound on the beam with an equal tension, no tighter at one side than at the other. If any of these things are neglected the result will be that one edge of the cloth is tight and the other slack and when such goods come to the bleach-house the selvages "crack."

One of the weaving defects that cause "cracked" selvages in bleaching results from bad sides. This is a common defect in all systems of warp preparing, and one which interferes greatly with the work of the weaver, and which also quickly makes its presence apparent in the woven cloth. Bad sides to the warp are perhaps, the most fruitful cause of bad selvages in the cloth, and are exceedingly difficult to deal with. The common causes of bad sides to a warp are (1) the denting of the warp too wide or too narrow in the beaming reed or comb; (2) loose beaming processes, especially in the slasher where a heavy press roll is used; and (3) crooked or unevenly fixed flanges which may cause a gap to be formed between the threads and the flanges, or cause the threads to be piled up for half of the beam's circumference. Piled up threads are obviously delivered from the beam, slacker than those of the body of the beam. Occasionally this may not be so very detrimental to the weaving as, for instance, when the selvage ends are interwoven more closely, and the take up, therefore, is greater than those in the body of the cloth; but as a rule, slack ends interfere with the passage of the shuttle

or even cause it to be thrown out. They may make a slack or curly selvage which will always give trouble in bleaching and finishing and cause cracked selvages. On the other hand tight ends from a sunken side of the beam, break excessively and are usually much more troublesome to deal with than slack side ends; their effect upon the motion of the shuttle and upon the appearance of the woven selvage is more pronounced, and they are a common cause of weak selvages and narrow cloth, for it frequently happens that the only way in which the warp can be woven is to run the tight threads off and either weaken the selvages to that extent or reduce the width of the cloth, and in either way the goods suffer in the bleaching and finishing and cracked selvages are the result.

Closely allied with the proper beaming of the warp at the sides in its effect upon the selvages of the cloth, is the strength and elasticity of the selvage threads. Such threads invariably require to be stronger than those in the body of the cloth, owing to the pull of the filling upon them as the shuttle passes through the shed and also because in many cloths they are interwoven more frequently. The common method of providing this increased strength is to double the number of ends in a few of the side dents of the reed, and run them two, or more, ply in the eyes of the loom harness. While this method is satisfactory in many cases where the goods are not intended for bleaching, it results, as we have shown before, in causing cracked selvages in bleached goods. A better method is to use a smaller, and, if possible, the ordinary number of ends of a superior quality of yarn, a two ply for preference. Such yarn not only possesses greater strength, but also greater elasticity, a quality which we have shown is essential when the selvage threads interlace more frequently than the others, as in twills or sateens with plain selvages for instance. In certain classes of these goods abroad, worsted yarn is used for the selvages because it is more elastic than cotton, and the selvage is so tightly stretched in bleaching and finishing that during these operations much trouble and loss has been caused by the weakness and subsequent cracking of cotton selvages.

Sometimes the breaking of the filling by the temple damages the selvage. If the pin that holds the burr in the temple is rusty, holes in the selvage will be the result. A badly worn burr will sometimes cause the filling to be broken in the selvage by not having grip enough on the cloth and when the reed is beating up the filling the yarn has to be spread out so much to be in line with the reed that the filling is broken, especially if there be too much friction on the bottom of the cop or bobbin. It is seldom that this occurs with a full bobbin. Sometimes this defect is caused by a late picked shuttle, but only on nearing the bottom of the bobbin. This is caused by the extra strain on the selvage threads; it draws back the cloth at the same time from under the temple.

Often the temple, not being perfectly straight, that is, the face of the temple nearest the reed in the line with the fell of the cloth, causes the filling to be broken in the selvage threads as the cloth passes through the temple. This is caused by the uneven pulling of the burr with the cloth. An extra large shed and uneven shedding will also cause this defect; and keeping the temple firm and rigid will cause the filling to be broken and all these holes in the selvage caused by broken filling will be liable to break out into cracked selvages when brought under the strain of the bleach-house pulling and stretching.

DAMAGES CAUSED IN THE BLEACH-HOUSE.

The handling of cloth in its passage through the bleach-house is usually effected in the "rope" form, the ends being gathered up and threaded up through glazed earthenware poteyes and in the course of its transmission in this form it is soon subjected to a series of spiral twists. If such a rope be opened out at any stage, it will generally be found that one selvage lies ahead of the other, so that the filling threads lie diagonally between the two. This leaves the selvage threads practically unsupported and is one of the first and greatest elements of danger to the goods, largely because this has to be remedied after the goods leave the bleach-house, the cloth being opened out in a scutcher and weft threads straightened by the application of tension or drag on the leading selvage as the cloth is led into the water-mangle at the commencement of the finishing process. Now if we suppose that the cloth has had all the stretch it will stand during the bleaching process it is obvious that the severe extra stretch on the one selvage which would be necessary to parallel the filling threads, added to the severe treatment accorded to the cloth by the scutcher under any circumstances, will be sufficient to crack the best of selvages and if the selvage has been damaged or weakened by any of the methods on the loom we have given, its breakage is almost certain.

The recovery of the width which may be lost by the longitudinal stretching of the goods is usually effected by a variety of means during the finishing of the cloth, such as scrimp bars and revolving stretchers, or belt stretchers and tentering frames. It does not concern us here except to say that any damage to selvages caused by broken filling or other weaving damages will hardly stand any severe stretching out without cracking. The running cloth is carried from the washing machine by means of wooden lagged reels. These should be driven so that their peripheral speed is greater than the delivery rollers of the washing machine or squeezers by 10 to 15 per cent. The transmission of the cloth over these is governed by their speed, the arc of contact between the reel, and the cloth, and the tension applied to the goods at their extreme ends during said contact. If the speed of the reel is too slow, or the arc of contact too small or the length of drop on the delivery end too short, it will reduce the tension too much and the reels will not deliver the goods, but, on the other hand, if the reel travels too fast or the arc of contact is too great, or the weight of drop too much, in fact anything that will bind the cloth too tight upon the quickly revolving reels, will be very likely to crack the selvages, especially if there is any of the weaving defects we have mentioned to increase the danger.

We have seen the driving power of a reel increased in cases of emergency by coiling the goods completely round it, but it is a dangerous business and a continued use of it would make cracked selvages certain on some lines of goods.

Where "stretch" or "gain" is an object to be attained it is important that the tension in threading up the various runs should be carefully and suitably adjusted, for, the best opportunity of effecting this required stretch or lengthening of the cloth in the bleach-house is when the cloth is being drawn through the various poteyes and the washing machine.

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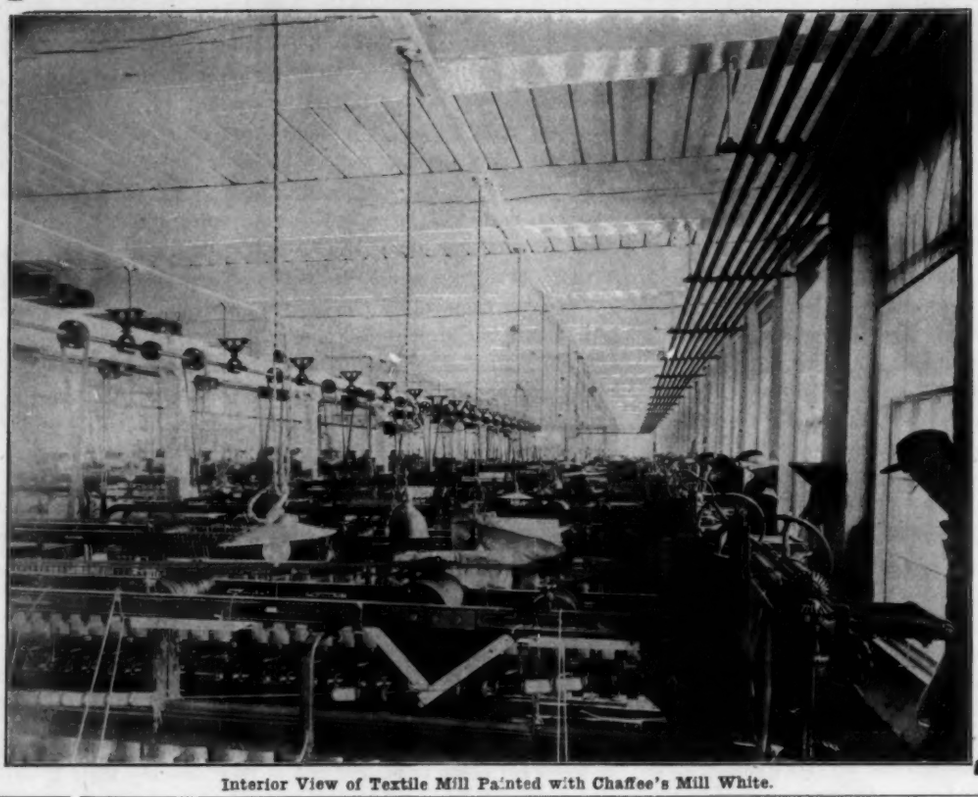

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Interior View of Textile Mill Painted with Chaffee's Mill White.

But, great judgment must be exercised to apply sufficient tension to get the length required without cracking the selvages, or fraying the cloth. The longer the distance the cloth is drawn from one part of the bleach-house to another and the more numerous the runs, the easier it will be to achieve the required stretch with safety. Should these straight runs fail to stretch the goods adequately, an additional tension can be introduced by means of extra poteyes which can be placed so as to put frictional tension on the cloth. We have known of bleachers placing a series of three poteyes at the entrance to the washing machine, the center one being movable so as to impart a more or less angle to the cloth as it passes through them; these vary the tension between that point and the nip of the machine; the most rational place for doing this is, we think, however, at the other end of the run so that the strain can be distributed over a longer length of material.

The friction that can be applied to the reels is limited to their driving power and anyway that is not the right place to apply tension, as the reels are quite apt to crack the selvages and fray the goods in any case, so that any friction in the direction of the reels must be reduced to a minimum. We do not recommend the production of an artificial tension as applied to a short length of cloth in a bleach-house. If the building is too short it is better to make the pull longer by taking the goods around corners by means of guide rollers and poteyes. I have been asked how much stretch or gain can be taken out of cloth by bleaching and my answer is that this entirely depends on the organization of the goods and not on the way they are stretched in the bleach-house, and it moreover depends largely on the way the goods were handled in the mill before the bleacher received them. With fair handling before bleaching the goods should increase in length after bleaching exactly what the warps lost in length during weaving, this will run all the way from 1½ to 7 per cent according to organization and the tension at which the warps were held in the loom.

I once knew a "Pirate" who tacked sandpaper onto the batching rolls of his shearing machine, ran his cloth with all the tension he could get and stretched it 7 per cent. It spoiled the look of the goods but he didn't care, he was out for a record and the bleachery who finished the goods could shoulder the rest of the responsibility. His employers had another mill in another section making the same goods and he was beating that mill in production by exactly 7 per cent, this record made him the "white haired little boy" with the powers that be and subsequently gained him the "V. C." in the shape of the agency of both mills. It is needless to say that the goods from his mill gained nothing in length in bleaching and finishing while the same goods from the other mill finished up better and gained about 8 per cent. The ultimate result was the same to the owners of the goods so far as stretch was concerned but the goods that were not stretched before bleaching were the most sightly. I know whereof I speak for *I was that bleacher* and lots of trouble I had with that fellow's goods. The other man turned out the goods from the loom according to old established ideas of commercial honesty, but the "Pirate" had taken a course in technology and theology or something of that sort at a textile school and was up on "scientific management" and "how to conserve your employer's resources for your own self glorification."

The roller washing machine is the one most generally used and serves its purpose quite well. The cloth enters

by the poteyes at the sides and is threaded round the rolls and the small roller in the bottom of the wash box into a series of spirals separated by glazed poteyes or wooden pegs. The ends of the cloth emerging at the ends or center of the rolls as the case may be and driven by the rotation of the rolls, are subjected to a series of nips and immersions in the water box. To reduce grooving in the places where the spirals of the cloth enter the nip of the roll the pegrail should be mounted on a traverse motion and gradually moved at times so as to cover the spaces between the spirals. Now these rolls should be skimmed up in a lathe when they show signs of grooving or irregularity in wear, otherwise the rolls nipping lightly in one place and allowing slip in another will subject the cloth to excessive local tension and the jerking of the upper roll which accompanies such irregularity tends to crack the selvage. Water blown goods are caused sometimes if the nip be too severe on the squeezers, this is a gathering up of the water more rapidly than it can be liberated and the strain caused by the rapid and forcible expulsion of the water bursts the threads on the selvages and makes cracked selvages from one end of the goods to the other. A badly worn pegrail will also cause cracked selvages. To sum up, cracked selvages are caused by holding the goods too tight in the bleach-house for the purpose of increasing the percentage of stretch, the selvages are always less elastic and weaker than the body of the cloth for reasons which we have already given and cannot be held tight with impunity. Scutchers are especially severe on a weak selvage and so are the scrimp bars and revolving stretchers and if any abnormal stretch is wanted it is better not to try to obtain it in the bleach-house but in the subsequent finishing. Some stretch can be gained on the water and starch mangles provided the cloth is batched up on rolls, not otherwise, but the best place to stretch the goods permanently is in the drying on the cans; lap the 7th and 8th and 9th and 10th cans with a thick lapping and feed the goods tightly into the machine, being careful to drive the machine from the delivery end and watch that the goods do not bag on the floor.

If the roll in the bottom of the washing machine box is square, or octagonal, or anything but a solid one, it will crack the selvages every time the running cloth is held abnormally tight in the washer. And if any attempt is made to run any goods "tandem" i. e., from the nip of one machine to the nip of another, without running slack over an intermediate reel the selvage will be cracked.

MAKING TANNIN EXTRACTS—It is reported that the Government of India has obtained the services of an expert who will shortly commence his work on the manufacture of tannin extracts on a commercial scale in the mangrove forests of Burma. It is hoped by the Government of India that when this work is completed the expert will be able to turn his attention to the manufacture of extracts from myrobalans, babul bark and other raw products for natural dyestuffs frequently met with in Indian forests.

If the war lasts beyond this summer, it will be the American farmer who will win or lose the war, who will overcome militarism and autocracy, or allow them to spread and control the world, ourselves included.

Khaki.

The present activity in the direction of the mobilization of a much larger army than this country has ever seen, means that the mills are going to be called upon to the fullest extent of their manufacturing abilities to provide the necessary cloth for the uniforms that will be required. Not less than 30 to 40 million yards of regulation khaki flannel shirting and mixed melton will be required during the next twelve months, to say nothing of the enormous yardage that will be called for in cotton khaki for the summer uniforms, tents, wagon covers, and other purposes, as well as denims and other kinds of cotton cloth.

The Government is not fully in the market for its requirements but already there is to be observed a great activity which in the serious intention of this country to make ready and equip the proposed army for the present war, is causing considerable anxiety in the minds of mill agents. The supply of dyestuffs alone, especially of such a character as will stand up under the required Government tests in point of fastness to soap, soda, and light, is presenting a formidable problem.

The former stringent requirements of the Government that cotton khaki should stand the permanganate of soda, chloride of lime, and muriatic acid tests have been waived, but in the absence of the indanthrene colors, even the problem of supplying fast olive drab shades which will stand the remaining government tests, is a difficult one.

The manufacturers of dyestuffs have had this condition in mind for some time, and one is now offering their khaki No. 1 for wool and worsted and khaki No. 2 for cotton. These processes are based on American made dyestuffs and dyewood extracts, and are altogether independent of European conditions of supply.

They have been developed under mill conditions, and are said to have not only proved that the standard government shades can be matched exactly, but it is claimed that the results are as fast to the prescribed tests as the imported colors. On wool and worsted these shades are obtained through the use of anthracene acid brown G. in conjunction with certain other modifying colors, and for the flannel shirting and melton mixtures, gives results which are in every way satisfactory.

On cotton goods, by means of a new quick acting cotton mordant in conjunction with certain colors made by this company, the use of high speed open width dyeing in padding machines and jigs, is said to be made possible, the regulation 2½ yard twill being dyed both for uniforms, tent and wagon cloths with perfect results. The costs per yard of these new Khaki processes compare very favorably even with pre-war conditions. The Marden, Orth & Hastings Company of New York and Boston will be glad to supply samples and particulars as to the processes, to any cotton, woolen, or worsted mills which are interested in Khaki propositions for United States Government requirements.

It is true that we can greatly increase the available food supply out of grain now used in making liquors, and by reducing household waste. But when these two things are done, and done thoroughly, they will not be enough. The final decision will still rest in the hands of the men who raise our food in the first place.

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An Ideal Factory— *and an Ideal Roof*

THE modern manufacturer floods his workrooms with sunshine, and his workmen keep in better health and do better work. Here is one of these factories. It is built in the most modern and scientific manner and is covered with a Barrett Specification Roof.

This is not to be wondered at. The wonder would be if some other type of roof had been specified, because most of the permanent structures of the country are covered with Barrett Specification Roofs.

This preference is due to the fact that such roofs cost less per year of service than any other kind; that they are free from all maintenance expenses and, further, because they are guaranteed for twenty years.

In addition, Barrett Specification Roofs take the base rate of fire insurance and are approved as "Class A" construction.

This combination of 20-Year Guaranty with low cost and low insurance rate has put these roofs in a class by themselves.

Guaranteed for 20 Years

We are now prepared to give a 20-Year Surety Bond Guaranty on every Barrett Specification Roof of fifty squares and over in all towns in the United States and Canada of 25,000 population and more, *and in smaller places where our inspection service is available.*

This Surety Bond will be issued by the United States Fidelity and Guaranty Company of Baltimore and will be furnished by us *without charge.* Our only requirements are that the roofing contractor shall be approved by us and that The Barrett Specification dated May 1, 1916, shall be strictly followed.

A copy of the Barrett 20-Year Specification, with roofing diagrams, sent free on request.

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Notes About Men You Know.

J. A. O'DONNELL, formerly Division Manager for The Prest-O-Lite Company at Atlanta, Ga., has been promoted to the position of Division Manager at Boston, Mass.

F. E. HORNER has been promoted from the Jacksonville office of the Prest-O-Lite Company to the position of Division Manager at the Atlanta office.

L. M. RICHARDS has been made Branch Manager of the Atlanta office of the Prest-O-Lite Company, Inc.

ARTHUR TOUSIGNANT has been appointed assistant superintendent of the Aiken Mills, Bath, S. C.

E. E. LEONARD, for the past four years overseer of carding department for the White Rock (R. I.) Mills, of B. B. & R. Knight, has accepted a position as overseer of carding for the Wauregan (Conn.) Mills.

ALBERT G. SMITH, OF THE CORN PRODUCTS REFINING CO., AT THE WHEEL OF HIS BUICK ROADSTER.

J. H. COADY, formerly in charge of the stores department of Jos. Bancroft & Sons Co., Wilmington, Del., is now purchasing agent for the firm.

J. F. TURNER has resigned his position at the Woodside Mills, Greenville, S. C., to become superintendent of the Southern Mercerizing Co., Tryon, N. C.

NAPOLEON TRUDEAU has accepted a position as overseer of weaving for the Uxbridge (Mass.) Cotton Mills, North Uxbridge.

EDWARD D. SMITH, of the Whitinsville Spinning Ring Co., at Whitinsville, Mass., was a recent visitor in Atlanta.

JOS. P. HOLT, of the Aberfoyle Mfg. Co., mercerized yarn department, Chester, Pa., is now stationed at League Island Navy Yard, as a member of the Naval Reserve in which he has enlisted. Samuel Roweroft of the Philadelphia office of the firm will assume most of his duties at the mill during his absence.

D. H. WALLACE, of Union, S. C., has resigned his position with the Keever Starch Company to accept a position as South Carolina representative for the Arabol Mfg. Company.

JOHN H. GIBSON has been transferred from superintendent of Lavonia (Ga.) Mills to same position with Eatonton Cotton Mills of Eatonton, Ga.

WM. D. ANDERSON has succeeded Andrew E. Moore as treasurer of Loray Mills, Gastonia, N. C.

HAROLD C. SMITH has resigned as assistant treasurer of the Dunean Mills, Greenville, S. C., to become agent and general manager of the Watts Mills, Laurens, S. C.

DONALD S. ASHBROOK, formerly head chemist, Joseph Bancroft & Sons Co., Wilmington, Del., has assumed charge of the Rockford plant of that company.

DEAN C. JENKINS, formerly chief inspector for the Bound Brook Oil-less Bearing Company, has been promoted

LEFT TO RIGHT, PAUL A. REDMOND, AGENT OF THE ARAGON (GA.) MILLS AND J. ARCHIE WILLIS OF THE ATLANTA JOURNAL.

to the position of assistant to the production manager. E. L. Evans has been appointed chief inspector.

C. C. BRIGMAN has accepted position as superintendent of the Saxe-Gotha Mills at Lexington, S. C.

J. M. PEARMAN has been promoted from spinner to superintendent of Lavonia (Ga.) Mills.

J. N. COLE has accepted position as superintendent of the Capelsie Cotton Mills, Troy, N. C.

TREASURER O. P. ENSIGN OF THE ENSIGN COTTON MILLS, FORSYTH, GA.

Photo by International Film Service, Inc.

Pyrene
KILLS FIRE
SAVES LIFE

THIS THING HAPPENS EVERY DAY

Cotton gins, mills, workhouses and wharves are in particular danger from fire. A cotton fire is a bad fire. Hard to stop. Spreads fast. Water is useless.

Pyrene is the best weapon yet devised for killing cotton fires. It is quick and sure, always ready and easy for even a boy to use.

Pyrene Manufacturing Co.
New York City.
Every Appliance for Fire Protection

OFFICERS OF THE MANCHESTER MFG. CO., MACON, GA.

Left to right, S. M. Arrington, Superintendent; William A. Crutchfield, President; and G. P. Rumble, Acting Treasurer.

William Ambrose Crutchfield, the president, is 73 years of age and has been 52 years in the mill business. His present mill was built in 1889, his brother, John F. Crutchfield, who has since died, being associated with him at that time.

Mr. Crutchfield is a Confederate veteran, but in spite his advanced age, he takes a lively interest in the war news. He declares that Germany will have a hard time whipping Uncle Sam. He says he knows, because he tried it—once.

A. F. KNIGHT has resigned as overseer of carding at the No. 2 Manomet mill, New Bedford, Mass., to become superintendent of the Imperial Cotton Manufacturing Co.'s plant in Hamilton, Ont., controlled by Lockwood, Greene & Co. Frank J. Davies, a second hand in the No. 1 mill, succeeds to the vacancy.

C. F. BROUGHTON, who has been connected with the New England Cotton Yarn Co. at its Fall River mill, has become assistant treasurer of the Wamsutta Mills, New Bedford, Mass.

EDWARD W. MCCUE has accepted a position as master mechanic for the Graniteville (S. C.) Manufacturing Co. He comes from Providence, R. I.

JOSEPH ROBERTS has resigned his position as assistant superintendent at the Hargrave Mill, to accept a position as superintendent of the weaving department for the Wamsutta Mills, New Bedford, Mass.

W. P. CARGILL has been transferred from overseer of spinning at the Granby plant of the Pacific Mills, Columbia, S. C., to a similar position at the Olympia plant, of the same place.

R. W. ATKINS,
OVERSEER OF CARDING
AT THE
MERRIMACK MFG. CO.,
HUNTSVILLE, ALA.

J. L. JEWELL has resigned as overseer of No. 3 spinning at the Piedmont (S. C.) Mills, to become overser of spinning at the Granby Mills, Columbia, S. C.

W. E. MCDANIEL has been promoted from second hand to overseer of spinning at the Bellwell Mills, Wilmington, N. C.

A. W. WARE, of Atlanta, Ga., has accepted position of overseer spinning at the Eastman (Ga.) Mills.

W. H. CAMPBELL has resigned as overseer of spinning at the Franklin (N. C.) Mfg. Co., to accept a similar position at the Wadesboro (N. C.) Cotton Mills.

A. W. YOUNG has resigned as overseer of spinning at the Nokomis Mills, Lexington, N. C., and accepted a similar position at the Mayes Mill Mayworth, N. C.

SIDNEY H. SCOTT, ball bearing engineer for the Hubbard Machine Co., of Worcester, Mass., is now permanently located in Greenville, S. C., at 242 Broadus Ave., where he can be reached by long distance phone, telegraph or mail in case his services should be desired by clients of the Hubbard Machine Co. It is their desire to see that all customers gain from ball bearing applications all of the advantages that they really possess, and they make special request that clients do not hesitate to call upon Mr. Scott at any time.

GEORGE F. PAYNE has been appointed superintendent of the Mount Royal Branch of the Dominion Textile Co., Ltd., Montreal, Canada. He was formerly superintendent of the St. Ann's Branch of the Dominion Textile Co.

T. B. SPENCER has resigned his position with the main office of Victor-Monaghan Mills at Greenville, S. C., and has accepted the position of general manager of the Humboldt (Tenn.) Cotton Mills.

J. W. BROWN has resigned as overseer of spinning at the Asheraft Mills, Florence, Ala., to accept a similar position at the Bladenboro (N. C.) Cotton Mills.

H. B. MILLER, WHO HAS RECENTLY RESIGNED AS OVERSEER OF CARDING AT THE EXPOSITION MILLS, ATLANTA, TO ACCEPT A POSITION AS SUPERINTENDENT AT THE ENSIGN COTTON MILLS, FORSYTH, GA.

J. C. SIMMONS has resigned his position at the Union Mills, LaFayette, Ga., to become night overseer of carding and spinning at the Cook Duck Mills, Cedartown, Ga.

A. J. MOORE has been promoted from loom fixer to overseer of weaving at Nokomis Mills, Lexington, N. C.

M. T. SANFORD has resigned as overseer of spinning at the Bladenboro (N. C.) Cotton Mills to accept a similar position at the Caraleigh Mills, Raleigh, N. C.

JOHN M. DAVIS, formerly of Prattville, Ala., has become assistant overseer of weaving No. 3, at the Dwight Mfg. Co., Alabama City, Ala.

WILL BUSH has accepted the position of assistant overseer of weaving at the Dwight Mfg. Co., Alabama City, Ala.

T. F. CLARK, of Cowpens, S. C., has accepted position as overseer of carding at the Knoxville (Tenn.) Cotton Mills.

M. M. COGGINS, formerly overseer of spinning at the Loray Mill, Gastonia, N. C., has accepted a similar position at the Parkdale Mills, Gastonia, N. C.

E. L. SHERIDAN, spinner at Harmony Grove Mills, Commerce, Ga., has also been made overseer of weaving.

W. A. BOWNE has accepted a position as overseer of slashing, etc., for the Suncook (N. H.) Mills.

C. W. MCKENZIE has been promoted from second hand to overseer of weaving at the Asheville (N. C.) Cotton Mills.

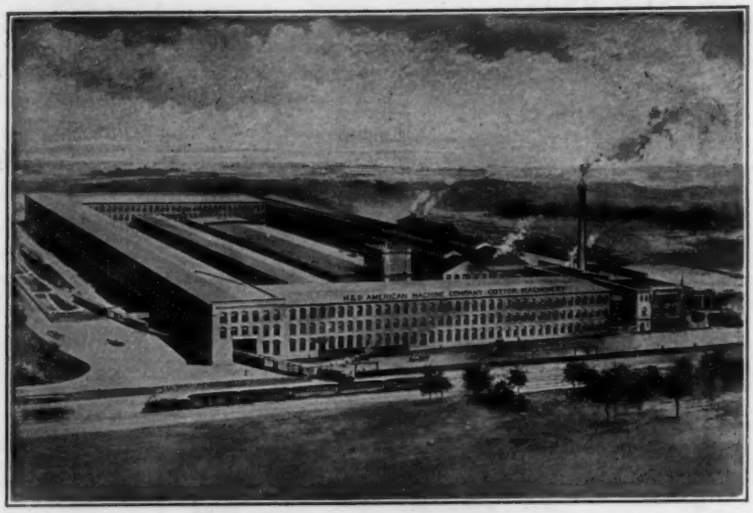
C. E. RILEY, Pres.
Boston Office
65 Franklin Street

Southern Offices
814-815 Empire Bldg.
Atlanta, Ga.

COTTON MACHINERY

Opening and Picking Machinery

Card Room Machinery



Spinning Room Machinery

Twisters for Wet or Dry Work

With Band or Tape Drive

H. & B. AMERICAN MACHINE COMPANY

PAWTUCKET, R. I.

J. R. FEDERLINE, JR., has resigned his position at the Poe Mfg. Company, Greenville, S. C., and is now overseer of spinning, spooling and warping at the Gainesville (Ga.) Cotton Mills.

W. H. BROWN has resigned his position at the Pickett Mill, High Point, N. C., to become overseer of spinning at the Erlanger Mill, Lexington, N. C.

J. M. FREEMAN has resigned as overseer weaving of the Ivey Mills, Hickory, N. C., to accept a similar position at the Kershaw (S. C.) Cotton Mills.

J. R. YOUNG has resigned his position at the Erlanger Mills, Lexington, N. C., to return to his former position as overseer of spinning at the Loray Mills, Gastonia, N. C.

G. T. HOLLOMAN has resigned as master mechanic and engineer with the Edenton Cotton Mills, Edenton, N. C., to accept a similar position with the Bennetsville Cotton Mills, Bennettsville, S. C.

THOS. BONE has resigned position as carding overseer with Bibb Mfg. Co., at Porterdale, Ga., and has returned to his former position with Exposition Mills, Atlanta.

B. A. ABERNATHY has resigned as overseer of spinning at the Franklin Mills, Concord, N. C., and accepted position at China Grove, N. C., as night overseer of spinning.

HAROLD JOHNSON has accepted a position as assistant foreman of the carding department for the Paramount Knitting Co., Kankakee, Ill. He comes from Crompton, R. I.

A. W. FARRIS has resigned as overseer of spinning at the Henderson (N. C.) Cotton Mills to accept a similar position with the Oxford (N. C.) Mills.

GEORGE T. THOMAYER has accepted a position as overseer of the knitting department for Fuld & Hatch, Albany, N. Y.

CLARENCE J. HUNT OF WADSWORTH, HOWLAND & CO., INC., BOSTON, MASS., ONE OF AMERICA'S BETTER KNOWN PAINT SALESMEN AND A RECENT VISITOR TO ATLANTA.

He was formerly employed at the Superior Underwear Co., Piqua, Ohio.

W. H. BRUMMITT has accepted position as night overseer of spinning at the Henderson (N. C.) Cotton Mills, being promoted from second hand.

THOS. B. HUDGINS has resigned as overseer of cloth room at the Eva Jane Mills, Sylacauga, Ala., to accept a position in the office of the Union-Buffalo Mfg. Co., Union, S. C.

J. H. WILSON, of Pelham, Ga., has accepted the position of overseer of spinning at the Wateree Mills, Camden, S. C.

EDWARD MCMANUS has accepted a position as overseer of carding for the new Rotch Mill, No. 2, New Bedford, Mass.

LAWRENCE A. WILLIAMSON succeeds the late Geo. T. Williamson as manager of the Saxapahaw Cotton Mills at Graham, N. C.

EDWARD H. WILKINSON has resigned as overseer of weaving at the Narragansett Mill to take the position of overseer of carding at the Indianapolis (Ind.) Bleaching Company. The employees of his department presented him with a traveling bag.

E. B. ARROWOOD has accepted a position as overseer of carding at the Pickett Cotton Mills, High Point, N. C.

R. M. DUNCAN has accepted a position as overseer of carding at the Jennings Cotton Mill, Lumberton, N. C.

R. B. RODGERS, of Lumberton, N. C., has accepted position as overseer of carding at the Bladenboro (N. C.) Cotton Mills.

MARVIN J. BATES has been promoted from second hand to overseer of cloth room at Eva Jane Mills, Sylacauga, Ala.

MANUEL CABRAL and Joseph Jason have been appointed overseers of spinning in mills No. 1 and 2, respectively, at the Rotch Department of the Passaic Cotton Mills Company, New Bedford, Mass., in place of Frank Marks, who has been made night superintendent.

J. M. HORNER, formerly overseer of dyeing at the Highland Park Mill No. 2, Rock Hill, S. C., has accepted a similar position at the Brogon Mills, Anderson, S. C.

ARTHUR J. HALES, formerly night superintendent of mills No. 1, 2 and 3 of the Rotch Department of the Passaic Cotton Mills Company, New Bedford, Mass., has been made assistant superintendent.

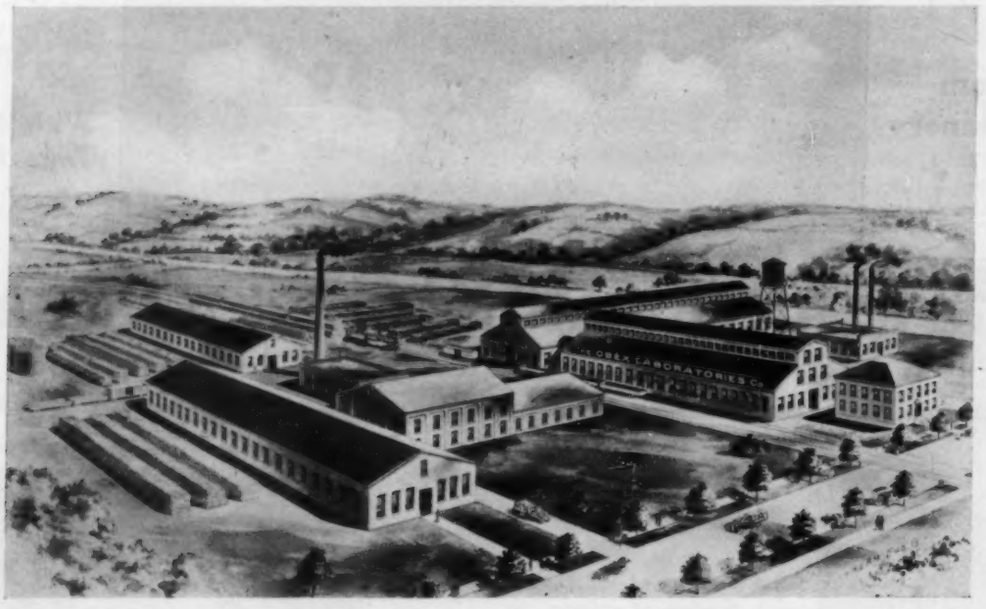
GUY LOUIS, of Louisville, Ky., has become overseer of carding at the Paramount Knitting Mills, Kanakee, Ill.

RUFUS BURRISS has resigned as overseer of twisting and warping at Norwood, N. C., to become night overseer of carding and spinning at the Capelsie Mills, Troy, N. C.

An Interesting Meeting.

A meeting arousing much interest was held Monday evening, April 16th at the plant of the Obex Company, Marietta, Ohio. One of the laboratory rooms in the plant had been fitted up for the occasion and here the guests of the company gathered for the program of the evening. Before the technical end of the program was taken up, G. A. LaVallee, president of the company, made a short talk in which he outlined the object of the meeting and gave a history of what had been done by the Obex Company during the short time the company has been in existence.

In addition to the logwood extract, which the company manufactured from the first, they have added a full line of other dyes and will soon be able to supply the trade in general in whatever amounts the demand calls for.



THE OBEX LABORATORIES.

A temporary laboratory had been arranged in one end of the room for demonstration purposes, and Mr. Clope, the research chemist of the company, had prepared several large charts which he used during his talk. While his address was necessarily along technical lines, his explanations and remarks were made in such a way that his audience received a very good understanding of the work which is being carried out by the Obex Company.

Mr. Clope explained and demonstrated by experiments and tests the various stages of the dye-making industry, and also gave some of the most important tests of dyed articles.

This research department of which he is in charge, has produced fourteen colors for cotton, silk and wool, all of these colors being fast. They also expect to be ready for the production of direct black in quantity on or about July 1st. They also report that their logwood and hematine business is developing fast and their large plant has been working twenty-four hours a day since the very beginning.

At the conclusion of the program for the evening a buffet lunch was served, after which an inspection of the plants of the Obex Company was made.

How Other Men Manage

Practical Discussions by Cotton's Readers on all varieties of Mill Subjects

Leather Covered Rolls.

EDITOR COTTON:

I shall appreciate it if the readers of your department "How Other Men Manage" will give me from their experience some information on the following questions.

How many leather covered rolls should a mill of approximately 56,000 spindles use per week? We will suppose that this plant is sub-divided into four sections as follows: Section A with 16,976 spindles, 11,248 of which are mule, and 5,728 ring. These spindles operating on an average of 15's and 16's; Section B containing 17,472 spindles operating on an average of 45's in single and ply yarns; Section C with 11,008 spindles, 7,680 of which are operating on an average of 17's cotton yarns, and 3,328 on an average number of 7's waste yarn; and Section D with 10,080 on an average number of 18's cotton yarn.

I have purposely refrained from limiting the correspondence to any kind of skin used or to be used, and also have made no reference to the quality of cushion used on these rolls so that I could, if possible, secure the widest range of information from the individual mills as to their personal experience with the different classes of material.

General Manager (N. C.)

A Standard for Breaking Strength.

EDITOR COTTON:

I will try and finish up my answer to "Carder" (Mass.) on the standard used to find the breaking strength of two-ply yarns?

From the best authors that I have been able to get hold of, as well as from buyers' specifications, I find the following:

Take the following numbers: 5's, for single yarn, 350 lbs.; for two-ply 800 lbs. Number 10's, single, 180 lbs.; for two-ply 400 lbs. Number 15's, single is 115 lbs.; two-ply 250 lbs. For 20's single 90 lbs.; two-ply 200 lbs. For 25's single 69 lbs.; two-ply 158 lbs. 30's, single, 57 lbs.; two-ply 137 lbs. 40's, single, 45 lbs.; 106 lbs., for two-ply, these make the standard for the numbers given, 2.26 times the breaking weight of the single numbers, in other words if the single yarn, breaks 100 lbs., the two-ply would break 226 lbs.

Of course the breaking strength varies, according to the quality of cotton used and also according to the twist put into the yarn. Then again the yarn will vary, according to the way in which the breaking or testing machine is used, but on an average these figures will be nearly correct for ring spun yarns. This is based on breaking 120 yards at a time on the testing machine.

Carder (Ga.)

What About the Vibrating Ring Rail?

EDITOR COTTON:

Will some of the readers of COTTON who correspond for the Discussion Department, kindly explain to me the arrangement and operation of the spinning frame with the "vibrating" ring rail?

What are the advantages or the disadvantages of this arrangement?

Honest Bill (Ky.)

Notice.

Will the correspondent who recently forwarded a letter to the editorial department for publication in the department of COTTON, "How Other Men Manage," and signing himself "Theory" kindly communicate with the editorial department, giving his name and address.

Reasons in Rhyme.

EDITOR COTTON:

There's a guy in this town laughing, 'cause he thinks he got my goat,
And I cannot "cotton" to it just the how or what he wrote;
And the way the fellow strutted kinder put me in a rage,
For I see by your March number that this fellow got the gauge.

Well, I want to show this fellow that I am not down and out,
And I'm going to stick to trying 'till I bring the thing about;
'Till the postman brings a message—'till I see on COTTON's page,
That a "Broom" can do some sweeping—a "Broom" that you can "gauge."

Please, Mr. Editor, the best ad. in your March number is, in my opinion, that of the Cyclone Fence Co., on page 14.

Every post a watchman, every link an eye,
Expression illustrative of intense efficiency.
Illustrated by the "cut" which in a twinkling shows
The essence of its nature, devoid of words verbose.
Cordon ever vigilant, ever staunch and true.
Each link an eye of warning, with the sunlight passing through.
The "Fence o' Links" a million eyes that never, never close;
The last word in security this ad sure does disclose.
A cyclone couldn't hurt it, with all its fearsome might,
Because its posts and links of steel are all built right.
A little boy, or robber bold, could never climb this fence,
While its fire and weather-proof design are just immense.

All these points are sure conclusive of its superlative worth,

While on grounds of great economy it "knocks spots off the earth."

As the Super of the "Motors" in Kenosha, Wis., did say,
One watchman equals twenty since the very lucky day

We fenced around our premises in the Cyclone Company's way.

All these points are not eclipsed in any ad, I wage,
So I wait with satisfaction the coming of the gauge.

J. F. Broom, Overseer Carding and Spinning,
Riverside Cotton Mills,
Danville, Va.

Bobbin Versus Flyer Lead.

EDITOR COTTON:

Reading the article by "Wash," in the January issue of COTTON, entitled "Should the Bobbin or Flyer Lead?" would lead one to believe that I had "jumped" on him. The truth of the argument is this: one writer signing himself "A. B." made some statements about the bobbin-lead frame, which I knew to be misleading. I took issue with him under the caption, "Examine the Man," and made reference to "Wash" and others. "Wash," without waiting for "A. B." to reply, "jumped" on me and after asking several questions, made the statement that I had a task on my hands if I undertook to prove "A. B." wrong. However, to support "A. B.", he made the statement that he (an expert fly frame man) was often compelled to doff his fly frames during the summer months, before the bobbins were full, and that the readers of this department would give him credit of knowing something about fly frames. I do! This statement of his was in the March, 1916 number of COTTON, now, in the January, 1917, issue, on page 169, last paragraph, he makes the statement that he has not been compelled to doff his fly frames before the bobbin gets full in the past 20 years! !

There is some inconsistency here, for one statement, surely contradicts the other. Again he stated, in March, 1916, that I was simply taking a fling at him and others. In his last article he says, after reading my last letter he fails to understand my position, and claims to have another convert in me, but evidently I wasn't aware of it.

My position is this, I am ready and willing at any or all times to acknowledge or admit a fact, when or wherever stated, when I know it. "Wash" has a task on *his* hands to convince any one who thoroughly understands fly frames, that a serious mistake was made when changing from a flyer-lead to a bobbin-lead.

Referring to the statement of "Wash," that the cone belt holds back the speed of the bobbins, he says, as the following proves, when the bottom cone is raised, the speed of the bobbins and flyer are equal. I presume "Wash" means a flyer lead, when he states that in order to wind on the roving, the cone belt gradually holds back, or takes revolutions away from the bobbins.

With the Houldsworth compound, take an indicator and get the speed of the bottom cone on a bobbin-lead frame. Then change the system to a flyer-lead frame, as "Wash" mentions, by putting the compound pinion, on the opposite side of the sun gear, or reversing the direction of the sun gear, have the belt in the same position on the cones, and again secure the speed of the bottom cone, which will be found to be exactly the same in both instances.

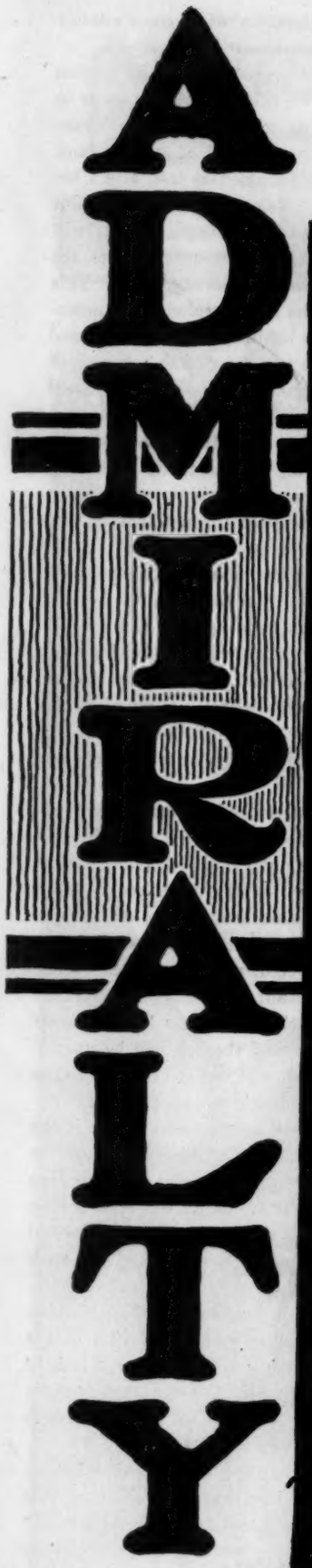
How does the cone belt take revolutions away from the bobbins, when the speed of the bottom cone is and will be the some in both systems with the cone belt in the same position on the cones? It seems, therefore, that it surely must be in the compound and nowhere else. Again I assert that the cone belt is a driver in both systems, and that the cones are governors of the sun or differential gear, always have been and always will be.

To prove that I am correct in these statements, first by my own experience, and second I quote William Shaw, in his article in the April issue of COTTON, 1916, page 276, next to the last paragraph, where he states that the differential or sleeve gear will be accelerated two revolutions for every one of the sun gear. Correct! In the next paragraph, on page 277, he makes this statement, that for every single revolution of the sun gear, two revolutions are taken away from the driving shaft. Impossible! Going back further, "Wash," (N. Y.) makes the same statement, as the last one on page 260, first column, ninth paragraph, April issue of COTTON, 1914.

If "Wash" will only stop and think, he will see how weak and misleading such a statement is, from this fact that if two revolutions were taken away from the driving shaft for every one of the sun gear, the speed of the whole frame would be altered. Is it not a fact that the top cone derives it's power from the driving shaft and then through the cone belt imparts motion to the bottom cone; this cone imparts motion to the sun gear through the carrier gears; and is not the speed of the driving shaft uniform in all fly frames unless the driving belt is slipping? Is not the driving belt imparting motion and power to the driving shaft? If these are facts, then how can the sun or differential gear take away revolutions from the driving shaft?

Any one can, (and "Wash" ought to) see that he has dodged his own knowledge to prove himself correct. Now if "Wash" had said that for every single revolution of the sun gear, two revolutions are taken away from the sleeve gear, (and not the driving shaft) he would not be so far on the wrong track, for this is exactly what is done. Therefore any one ought to be convinced that the construction of the compound has all to do with imparting the excess or diminished speed to the sleeve gear, and from this gear to the bobbins, and that the sun gear or differential gear is governed by the cones.

Continuing, "Wash" says that the cone belt is the only agent that can drive the bobbins at an excess speed, and then asks, how can the shaft be an aid in such a case? Also, he asks, if it is not the cone belt that creates the excess speed, then what does? Answering the last first, I will say that for every revolution of the sun or differential gear, two revolutions are added to the sleeve gear in a bobbin-lead frame; and for every revolution of the sun gear, two revolutions are taken away from the sleeve gear in a flyer-lead frame. The sun or differential gear is governed by the cone in both systems. The bottom cone, being driven by the cone belt, imparts the requisite number of revolutions to the sun or differential gear, which causes it to impart the conditional number of revolutions to the sleeve gear, so that it, in turn, will impart the correct excess or diminished speed



NEW RIVER-SMOKELESS COAL

THE name ADMIRALTY was selected by The Chesapeake and Ohio Coal & Coke Co. as a trade name for its New River Coal, as it was demonstrated by actual tests to be EQUAL, if not superior, to the best English Admiralty coals.

ADMIRALTY is a semi-bituminous coking coal with an exceptionally low percentage of ash and sulphur—high in carbon and containing just the proper amount of volatile matter to ensure the greatest amount of heat. It also possesses unusual Smokeless qualities.

Uncommon care is exercised in the preparation of ADMIRALTY at the mines and it is shipped in a condition which insures the highest results when properly handled. As a further safeguard toward maintaining the high standard of QUALITY which has always characterized ADMIRALTY each car is sampled and the sample is analyzed before the car leaves the mine.

Analysis made by the United States Government of twenty-five consignments of ADMIRALTY for barges and steamers at Hampton Roads, approximating 43,000 tons, resulted as follows:

Moisture	2.6	Vol. Matter	18.9	Fixed Carbon	76.5
Ash	4.5	Sulphur	.88	B. T. U.	14,921

The Chesapeake & Ohio Coal & Coke Co.

(Selling Agents for New River Collieries Co.)

EXECUTIVE OFFICE, 120 Broadway, New York City

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Cincinnati, Ohio

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Leadenhall Street,
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4 Lloyds Ave.,
London, E. C.

SOUTH AMERICA
Chadwick, Weir & Co., Ltd.
25 De Mayo, 158
Buenos Ayres

to the bobbins in either system, in order that proper winding on may take place.

How can the shaft be an aid in such a case? This is how. The jack shaft gear transmits motion to the bevel gears of the compound, they being in mesh with the sleeve gear transmit motion to it, causing the speed of the bobbins and flyer to be equal when no winding takes place. Any reader can try the following experiments and convince himself:

First. Release the jack shaft gear from the driving shaft, place a collar or clamp behind it so it will not slip back out of mesh with the bevel gears, start the frame with the bottom cone down, and see if any motion is transmitted to the bobbins. There is not. This, alone, ought to convince any one.

Second. On a fine frame, the speed of the flyer is 1200 r.p.m., the speed of the bobbins 1280 r.p.m. when empty, now with the jack gear loose on the driving shaft, as stated, take a tool of some kind, and hold this jack gear positively still, have the bottom cone down. After arranging the frame in this manner, start it up on full speed and notice the bobbins. The result will be 80 r.p.m. of the bobbins and 1200 of the flyer, showing beyond a doubt that the cone, only, imparts sufficient momentum to the sun gear, causing it to accelerate the sleeve gear the correct number of revolutions, and thus to the bobbins that winding on may take place, when every thing is in normal working condition. This will apply to the flyer-lead frame also, only showing the revolutions of diminished speed the bobbin is making to that of the flyer.

This question summed up means that the compound gearing, or the sun or differential gear, receives its variable speed from the bottom cone, and combines it with the constant speed of the driving shaft, and delivers it as one motion to the sleeve gear and hence to the bobbins.

I agree with "Wash" when he says that the majority are fair, and facts are facts. The foregoing experiments prove that the driving shaft does aid in driving the bobbins, in fact it performs the most important part of it. The cones do not carry the full load, if they did, the surface of the cones would be too small, and the cone belt of the size used would be insufficient and continually slipping.

"Wash" says learn that there are two speeds on all bobbin-lead frames which brands them as the most imperfect machines in a cotton mill. Why did he not include the flyer-lead frame? Is it not a fact that all fly frames are so built as to have two speeds, one that is constant for the flyer, and one that is variable for the bobbins, in order that proper winding on may take place in either system?

"Wash" also claims that the variation in speed between one frame and another, will require a different cone in order to get a practically perfect tension. Is he aware that one of the most prominent builders of fly frames in America today, uses only one size cone on all of their fly frames? Is it not possible to alter the speed of any part of any machine by changing the various change gears that govern such part of the machine? If so, why the necessity of having a different cone for the different hanks, stock, speed, and type of flyer, to get the correct tension? If "Wash" is correct, how could a builder use the same size cone for slubbers, intermediate, fine and jack frames on hank roving ranging in numbers from .20 to 25.00 and with the speed of spindles varying from 530 to 1500 r.p.m., and still take care of the tension on all frames so equipped? If the tension could not be taken care of by the alteration of various change gears, etc., what is done in the case outlined?

"Wash" says he cares not how perfect we get the tension with the proper tension gear, if we raise the bobbin so as to make the end slack, this slackness will be taken up immediately, and that this is a sore one for all of us to admit. I say it will not. Any reader can make this test, and I believe the majority will be fair. Raise the bobbin, turn it back a half or a whole turn, start the frame, and it will take from twenty seconds, to one minute, according to the slackness of the end, for the slack to be taken up. This slack is taken up gradually in the above stated time, meanwhile the strand is wound on the bobbin in a very loose and incompact form. This will show that no stretch takes place in the other ends, unless the tension is *too tight*. Try it and examine the roving.

There is a resistance offered to the strand between the front roll and bobbin. When the end is made slack this resistance is destroyed, thus the roving is wound on the bobbin in a very loose and incompact form. That is why this slackness is taken up, but not immediately, as "Wash" contends, so why should he claim that stretch takes place in the other ends?

He offers a check for $10.00 to any one who can explain how any flyer-lead frame will stretch the roving, with a proper rack or tension gear, granting that the front top leather roll does not lag behind the bottom steel roll. Giving him the benefit of the above statement to the fullest extent, if "Wash" will allow reason to be his judge he will surely see the absurdity of his statement.

Presenting some causes for stretched roving on a flyer-lead frame, should the front steel roll be retarded in any manner (and it can be done), this will cause stretched roving as the following shows: If any of the main gears on or from this roll, to and including the gear on the end of the top cone shaft become slightly loose, this will allow vibration or back lash in the parts connected, while the speed of the flyer and bobbin would be constant, thus causing stretched roving. Again should any of the roll joints become worn and loose in the joint, the motion of the roll will be uneven and stretched roving is the result. If the steel roll becomes bent, this crookedness will eliminate the proper draft between the rolls and the roving will be stretched. Also if the head gears are improperly in mesh with each other, or the crown and draft gear incorrectly set, or the rolls binding which will cause the roll to chatter, or quiver—the roving will be stretched. Again, should the trumpet become choked up it will cause a draft between the trumpet and the back roll and stretch the roving.

The motion to the bobbins is transmitted through nine gears, where only five are used to transmit motion to the spindle. In a worn condition there is greater back lash in the nine gears, than there could be in the five, therefore, in starting the frame this back lash will cause some hesitation of the bobbin and stretch the roving.

Again, should one of the coupling gears on the bobbin shaft become partly loose, this will cause hesitation of that part of shaft it controls and the speed of the bobbins would not be uniform, so the ends on these bobbins would be stretched in a flyer-lead. When an end breaks down on a flyer-lead frame considerable waste is made at times by the end unwinding, making this bobbin smaller in diameter than the others; then this end will have to be wrapped a less

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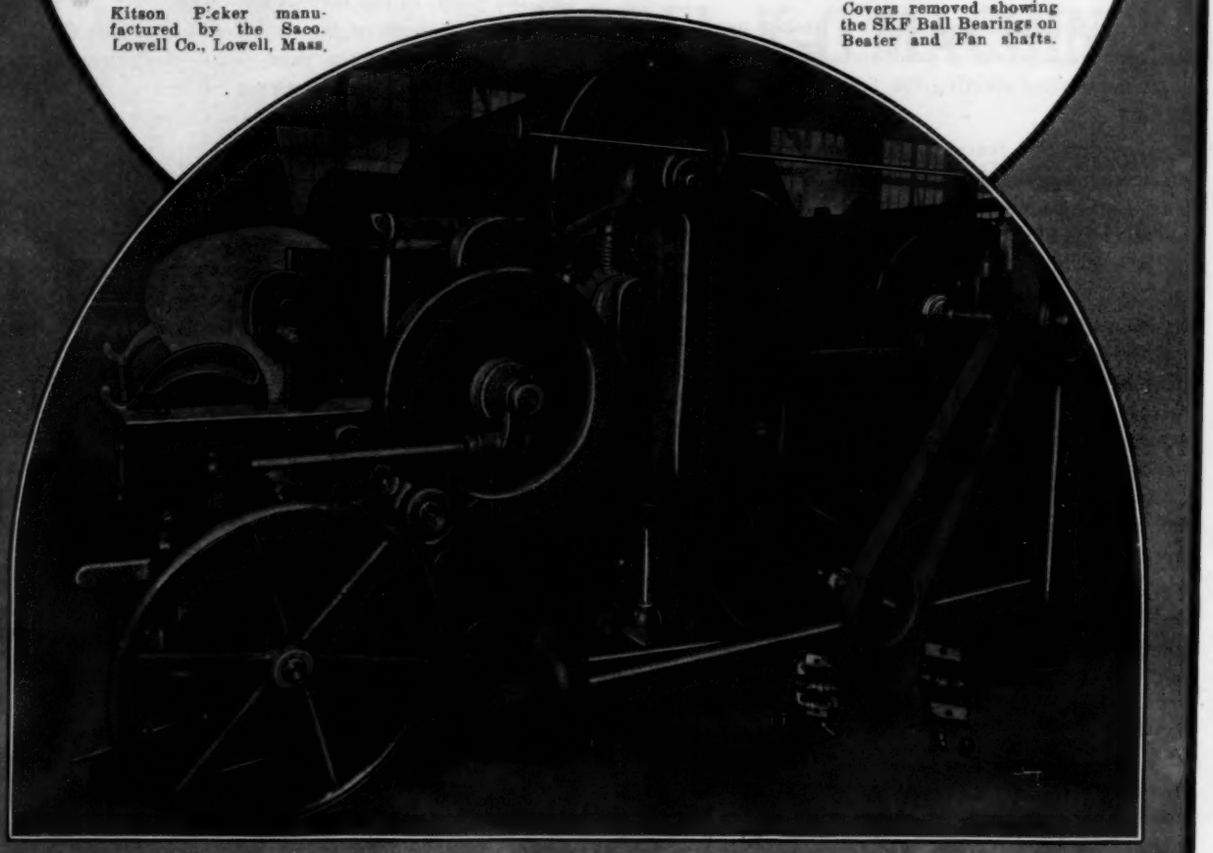

number of turns on the presser finger, which allows the twist to escape from the roving, and the diameter of the bobbin to increase too rapidly; the strand will be soft and stretched, or this end will be broken back to keep from stretching the roving. This is one of the main causes of stretched roving in a flyer-lead frame, and one I notice that "Wash" has never mentioned in any of his articles.

Excessive draft will cause stretched roving, also an insufficient amount of twist inserted in the strand is a great evil in stretching the roving. The carriage dwelling on the change will cause ridges to be formed on the bobbin and these will stretch the roving. There are several slots in the end of the bobbin, some of these in a few bobbins may be broken or worn out and with a careless frame tender these places may be put on the pin; also some of these pins can be found loose at times; all of these things will permit vibration of the bobbin and cause stretched roving.

Some few of the causes here mentioned will also cause stretched roving on a bobbin-lead frame, but there is one that will cause slack in the bobbin-lead frame, and stretch in the flyer-lead frame. If "Wash" is fair I am looking for his check for $10.00. I will also be glad if he will answer the following questions:

Who is the builder of the modern flyer-lead frame he wrote of some time ago, where located, and is the frame a single or a double flyer?

What change would he make to convert a bobbin-lead frame to a flyer-lead, using the same flyer as the bobbin-lead?

What is the actual difference between the bobbin-lead and the flyer-lead in production, both on the same hank roving?

On a Woonsocket frame, with a proper tension and the rolls in normal working condition, an end here and there snaps down when starting the frame, what is the cause of this?

Taking an 8x4 frame, with .60 hank roving in the creel, and making 1.80 hank roving with 1.75 turns per inch, what changes will be necessary to insert 3.23 turns per inch in band roving 1.80 hank?

Explain fully. These are practical and original questions.

The prevailing idea that hesitation of the bottom cone causes stretch is a mis-nomer. Here is the puzzle to explain. There is a tendency for the sun or differential gear to revolve in the opposite direction to that in which it is driven by the bottom cone in a bobbin-lead frame. (To change a bobbin-lead frame to a flyer-lead, it is only necessary to put in a spur gear between the compound and the cone, thus reversing the direction of the sun or differential gear and making it run in an opposite direction from that in which it is driven by the cone in a bobbin-lead; also change the type of flyers). Now should the bottom cone jump up and slacken the cone belt (it frequently does), this tendency or momentum of the sun or differential gear, while the belt is slack, would speed up the sun or differential gear and slow down the bobbins in a flyer-lead frame, thus causing stretch, one of the main causes of it's abandonment, and another proof that the cone belt does drive the cone at the proper speed in order that proper winding on may take place.

R. W. A. (Ala.)

The Speed of the Ring Rail.

EDITOR COTTON:

To have the "ring rail" of the machine to travel its fastest speed while making its upward stroke, in my opinion, is the best for filling yarn, as the balloon of the end is the smallest when the traverse places the yarn on the smallest diameter of the bobbin. This being true, we must admit that more tension is placed on the yarn when being wound on the smallest diameter of the bobbin. This causes the yarn to lay tight, and grips the bobbin more firmly. This, in turn prevents a large per cent of the filling yarn "sluffing off" into the cloth, which is a common evil in some weave rooms, having the strokes of each layer too short in length. The use of improper lay gears on the machines will also cause this trouble, i. e., to place the coils of yarn too close together on the surface of the bobbin.

HOSIERY YARNS.

A close attention to the distance between the top of the bobbin and the thread guide wires, and a close attention to securing the right weight of travelers, has more bearing upon the runing qualities of hosiery yarn than any other thing, connected with the subject under discussion.

For hosiery yarn have the ring rail traverse its fastest speed while making its downward stroke. "Why?" Because the ring rail going up slow naturally relieves the tension on the yarn, reducing the strain, then changing to its faster speed at the top reduces the dwell of the ring rail at its upmost point.

An experienced eye can readily see from this that there is only a small distance from the top of the stroke on the downward motion of the rail, where there is really strain on the yarn, as the increasing diameter of the full bobbin causes the balloon of the end to enlarge, which decreases the pull and strain on the yarn due to the increased speed of the traveler. To have the ring rail travel its fastest speed downward causes it to get-away from the "strain-point" quickly.

I would recommend the distance from the top of the bobbin to the thread guide wires on numbers ranging from 15's to 24's using 3.00 times square root (Hosiery Multiple) to be from 1¾ to 2 inches. Above these numbers the distance should be more, and the proper travelers used. The distances used would be from 2½ to 3 inches.

To get good results from hosiery yarn, every strain on the yarn should be eliminated, proper twists and correct travelers used, guides kept straight and perpendicular with spindles and spindles kept as near perfectly plumb as possible. Keep the numbers leaning a little to the heavy side, and a relative humidity of from 65 degrees to 70 degrees at all times.

Yosemite. (Miss.)

The Home of Proctor Dryers.

The home of Proctor dryers has undoubtedly been brought very forcibly to the attention of many readers of COTTON through the receipt of a large framed photograph of the modern plant of the Philadelphia Textile Machinery Company. One of these handsome prints, approximately 18 x 36 inches in size and mounted in a fumed oak frame, was sent to COTTON, and is attracting much attention from visitors to its offices.

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Cost Accounting in the Knitting Mill.

BY RALPH H. BUTZ.

Manufacturing Expense.

In preceding articles we have shown that the first element of cost in manufacturing processes is material, while the second element of cost is labor. The cost of material added to the cost of labor results in the prime cost of the commodity manufactured. In the factory where an efficient cost accounting system is maintained it is not a difficult matter to ascertain the value of material and labor that enter into a certain product.

There is, however, a third element of expense which must be added to the prime cost to ascertain the total cost of manufacture. This third element of cost is manufacturing expense, sometimes called factory expense or overhead. This expense is of such a nature that it cannot be definitely assigned to any particular job or series of jobs at the time it is incurred. It is around this item that many of the difficulties of cost accounting arise.

Manufacturing expenses do not change the appearance or composition of the article manufactured. They are an intangible cost which it is necessary to incur in order that the plant may be operated at the highest point of efficiency. Each job must bear its proportionate amount of this expense burden, because these expenses were incurred in order that the factory might continue in operation.

Before these expenses can be distributed in the proper manner it is necessary to determine just what items constitute manufacturing expense. There are numerous items that may not seem to bear any relation to the process of manufacture, and which are not directly chargeable to any particular process, and yet are necessary that those processes may be continued.

The first items to receive consideration are the fixed factory charges. As a general rule these fixed charges are of such a character that they do not vary to any great extent, and can therefore be determined with a certain degree of accuracy. The first item under this heading is building expense or rent. When the manufacturer owns the factory building the expenses consist of insurance, taxes, and depreciation. If the building is rented the owner will pay these items, and the manufacturer will pay rent. Such items as light, heat, water, and sundry expenses, the manufacturer will pay in either case and will be included in his expenses.

When the manufacturer owns the building and has invested a certain amount of his capital for this purpose another important question arises,—should interest on this investment be included as a part of manufacturing expense? This is a subject upon which many accountants are at variance, and volumes have been written to support the various individual theories in this connection. However, the concensus of opinion is that interest on the investment is not a part of manufacturing expense, but its inclusion in the cost figures will give the manufacturer a much better idea of the results he has attained during a certain period. It is advisable to enter this item separately on the cost sheets instead of including it with the other fixed charges.

We will assume that a manufacturer pays five thousand dollars annually as rent for the use of a factory building. It is natural that this amount is a part of manufacturing expense, and is so charged to the materials manufactured. Suppose the manufacturer purchases this building for $40.-000 and thereafter charges to manufacturing expense only such items as insurance, taxes, repairs, and depreciation. Under these circumstances his fixed charges will not be one-half of what they were previously, but they will not represent the exact facts, because he did not account for the interest on his investment. Thus it will be seen that when the building is rented the fixed charges would be higher than when the building was owned, that is if the interest on the investment is not taken into consideration. As an actual fact the difference in the building expense is not very great, whether rented or owned, when all items are properly included on the cost sheets.

The charge for power may be distributed on an equal basis for each machine where all the machines are of practically the same pattern and the power consumption of the various machines does not vary to any appreciable extent.

Depreciation is one of the most important of the overhead charges and is usually the largest. Many manufacturers can not understand why depreciation should be added to manufacturing expense, thereby increasing the cost of manufacture.

Depreciation is a real thing and occurs every day that the machinery is in use. It is the constant wearing out of those assets known as building and equipment. In the process of manufacture the machinery and other equipment is being consumed together with the raw material and labor. This in itself is sufficient explanation why depreciation is a proper charge to the cost of manufacture.

There is no recognized standard method for charging depreciation owing to the fact that no two factories are alike. The method in which it is accounted for in the different factories varies according to the views of the management, but it is a recognized fact that a system which does not provide for deprecation charges, is at best a faulty system and is not to be relied upon when exact costs are required.

There are certain manufacturers who charge depreciation during those years when a good profit has been earned, but when the profits for a certain year are small no depreciation charges are included. It would seem that the man who follows this method must be able to convince himself that depreciation occurs only during those years when profits are large.

While it is very improbable that any person can estimate the exact life of machinery, or the exact amount of yearly depreciation, the practical manager can make approximate estimates that will be accurate enough for the purpose. The best method is to ascertain the value of the various kinds of machinery and determine the yearly depreciation of each separate kind.

One manufacturer may estimate the life of a machine as ten years, and to find the annual depreciation charge he will subtract the scrap value of the machine from its original cost, dividing the result by ten, which will be his estimate of the annual shrinkage in value. Another manu-

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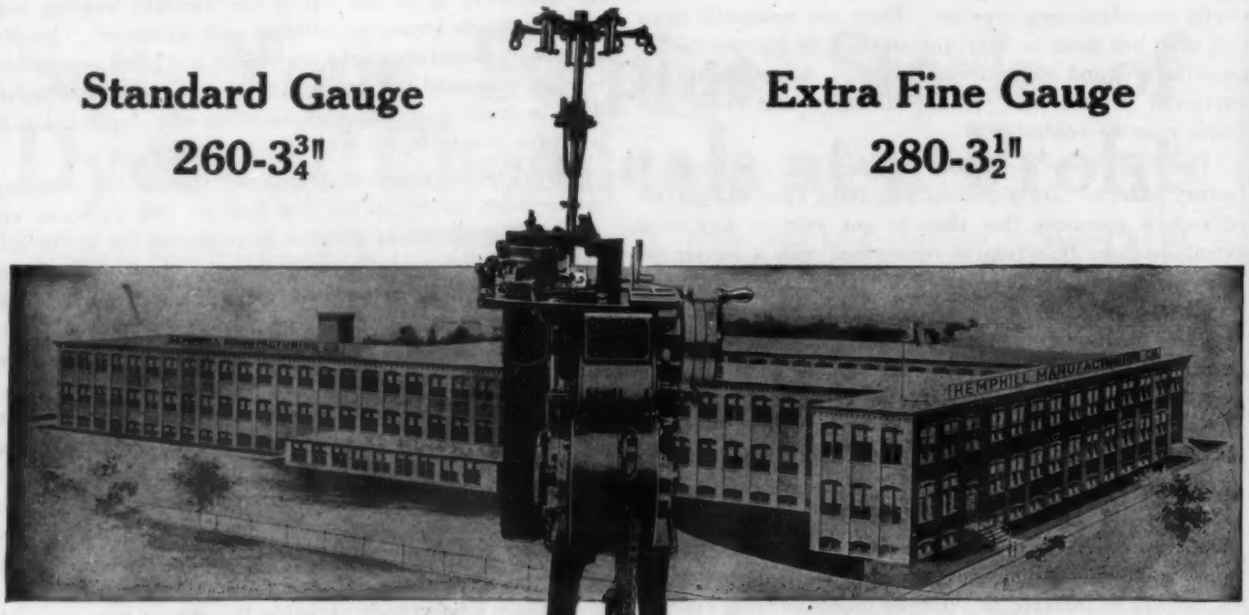

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facturer may estimate the life of the same machine as fifteen years and therefore charge less depreciation annually; but he may find at the end of ten years that the machine is so worn that it can only be operated at greatly reduced efficiency, and if it is kept in use during the extra five years as originally estimated, he may find that the loss in decreased production and general loss of efficiency has more than exceeded the annual depreciation charge. Under those circumstances he would have used better business judgment if he had scrapped the machine at the end of the ten year period.

Some factory managers are guilty of underestimating the amount of depreciation in order that they may show lower production costs, only to realize at the end of a number of years that the actual value of the operating plant is but a small part of the asset value recorded upon the books. Just such a state of affairs has often been responsible for the ultimate failure of careless manufacturers. No adequate reserve has been created during the period when the plant was at the maximum of efficiency, and when it is necessary to replace old and worn-out machinery there is no capital available for the purpose.

A method in general use is to reduce the value of the assets each year by deducting the depreciation instead of creating a depreciation reserve account. For instance, the following figures will illustrate this method.

Value of machinery and equipment Jan. 1, 1914	$50,000
Charge 10% depreciation for year 1914	5,000
Value of machinery and equipment Jan. 1, 1915	45,000
Charge 10% depreciation for year 1915	5,000
Value of machinery and equipment Jan. 1, 1916	40,000
Charge 10% depreciation for year 1916	5,000
Value of machinery and equipment Jan. 1, 1917	$35,000

It will be seen that by following this method of deducting the depreciation from the asset account, at the end of ten years the asset account would be closed, showing that this class of assets had been used or had entirely disappeared from the business, which could not be the real state of affairs. The more logical method to adopt is to leave the asset account at its original value and create a depreciation reserve account. This method is illustrated as follows:

Machinery Equipment $50,000	
Depreciation Reserve Jan. 1, 1914	$5,000
Depreciation Reserve Jan. 1, 1915	5,000
Depreciation Reserve Jan. 1, 1916	5,000

By adopting this method the asset account will always show the original value of the machinery and equipment, and as this machinery is or should be kept at this value by making replacements when necessary, the desirability of keeping the asset account intact will be realized. When machinery is replaced the Depreciation Reserve account is charged with the value of the new machinery, as this is the very purpose for which the reserve is created. At least a part of the amount set aside as a reserve should be kept in such a condition that funds will be available for replacements when required.

The treatment of depreciation of productive plant may be considered in the same manner as an insurance policy or a lease. Suppose the manufacturer pays $10,000 for a lease on property for a term of ten years. At the end of the first year the value of this lease will have been reduced by $1,000, and each year thereafter in the same amount, until at the end of the ten year period the entire amount of $10,000 will have been charged to profit and loss.

The same treatment applies to productive plant, with the exception that the manufacturer has the privilege of keeping it at its original value by making renewals or replacements, and for this reason creates the depreciation reserve. Should he intend to operate the plant for a certain period, or only as long as the estimated life of the machinery, then there would be no reason for creating a reserve for replacements. In such a case the annual charge for depreciation would merely reduce the assets to that extent.

Insurance is also a fixed charge and is treated in the same manner as the other fixed charges. Insurance on boiler and fly wheel are direct charges to the power department and are included with the power costs. Workmen's compensation and other forms of liability insurance are charged to general factory expense from which account they are distributed.

There are a number of smaller items that belong to the fixed charges and these are also charged to the general factory expense. Under this heading will come such items as indirect labor, renewals, repairs, miscellaneous supplies, etc.

The Knit Goods Market.

The knit goods market is seemingly well balanced. Most mills that are not sold up are getting about all the business that can be handled advantageously, and buyers are exercising no great pressure except for merchandise due against low priced orders placed almost a year ago. The disposition of manufacturers who have room for some additional business is to trade cautiously, selling for only a few months ahead and covering for yarns.

A number of mills manufacturing cotton hosiery have yet to go out for fall business, nearly all of which would be placed by this time under normal conditions. Among many manufacturers the belief prevails that better prices will be obtainable two months hence. Some of those which have been in the market for medium weights have had disappointing results, having found many jobbers not interested at present prices, which, it seems a safe assumption, will look low as the war preparations progress.

It is apparent that some buying interests have been trying to bear the market, even in the face of a hardening of yarn prices following the bulge which came as a jolt to those who were gleeful while cotton was droopy.

While the newspaper press and a considerable part of the public are clamoring for war, large distributors are fearful of the effect of peace on the market. This fear and the abortive bear movement are responsible in part for the deferred buying, which, however, should occasion no alarm in mills, for there is an acute shortage of some lines, notably balbriggan underwear. But there are other reasons.

A question that is frequently heard is, at what stage and in what lines will the consuming public retrench? Curtailment is not likely to commence with foods, except insofar as luxuries are concerned. Will the public buy as heavily of articles for wear at the higher prices? Judging by the

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Any number of stitches in the Flatlock seam may be cut, but the seam itself *will not rip nor ravel when pulled in either airection.*

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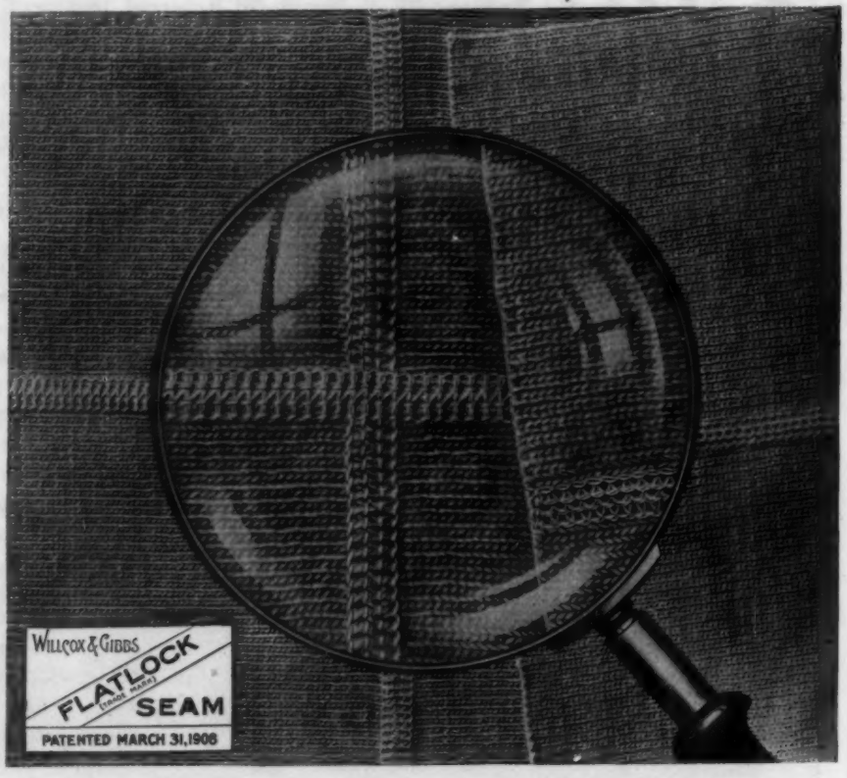

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If the governments of these two great countries, the United States and Great Britain, so thoroughly approve the use of Flatlock Seam on military underwear, is it not fair to claim that underwear with the Flatlock Seam will prove more satisfactory and therefore more salable to the civilian customer and hence more profitable to the manufacturer than underwear seamed by any other method?

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prices that are being paid for shoes, the consumer has no idea of abandoning the American standards of dress.

A factor in the gulf between mill and distributor is the reselling of merchandise to jobbers by merchants who are drawing against orders placed at last year's prices. For illustration, a line of hosiery that opened last year at $1.90 a dozen is being sold by some few jobbers to other jobbers at $2.25 to $2.35, while the mill price is $2.75 and could not well be lower on the basis of present costs of yarns, labor and mill supplies. Jobbers picking up these bargains in cases are distributing in dozens, at the mill price, among retailers, who therefore are paying a profit to two distributors, and, necessarily, getting it out of the consumer.

This sort of business is quite common in New York, more particularly on the east side, and explains why, in some of the cheaper lines, there is no established price.

Good stock is scarce. This is evidenced by the extremes to which many merchants will go to force deliveries. The favorite scheme is to not pay for merchandise delivered until shipments against their orders are completed. So many controversies have originated in this arbitrary withholding of payments past due that there has developed among manufacturers a movement for clearly specifying on order acceptances, that it is mutually understood that each shipment constitutes a completed transaction, and that if the buyer violates any of the trade terms the seller may withhold shipments "under this or any other accepted order until payment be made, or cancel this and any other orders."

Rubber stamps for affixing such a clause are to be supplied by the National Association of Hosiery and Underwear Manufacturers to its members, on application, and it is the belief that their use will become quite common. Adoption of this safety provision by reputable mills will encounter no antagonism from reputable merchants. Others may prefer to fight their battle after the manner of the Kilkenny Cats.

A southern mill which, like many mills in the South, has been prepaying freights to New York, is favoring the elimination of this absurd policy since the rate has been advanced to 60 cents from 51 cents. New York freight allowance is common among mills in the North, although in many mills the practice has not been permitted. From the fact that these mills are having all the business they can take care of it is evident that it would be no difficult matter for all mills to have freight charges follow the merchandise, as they should. It is a custom that grew up with competition and was fastened by jobbers upon mills simply because the latter allowed themselves to be beguiled, gave no heed to the future and neglected an opportunity afforded by co-operation.

The elimination of New York freight allowance should begin in the north and pushed to the uttermost limits of the South, to be followed by a price differential for putting the knitting interests of the two sections on a level of price equality.

From the South also comes a suggestion that for the duration of the war, the operations of the Federal child labor law and the work hour restrictions applying to women in a number of states be suspended by legislation. As the government is clamoring for conservation of food and other resources and appealing for sacrifices, it might not be out of place to call for a return, temporary, at least, to the saner work hour schedules that prevailed before labor agitators and multifarious organizations operating under the guise of uplift and reform, cast a spell over the law makers. Aside from the paid leaders, labor doubtless would welcome the privilege of doing their bit in the factory as a means of tiding over the abnormal cost of the necessaries of life. The question was favorably acted on at a recent meeting of Pennsylvania hosiery manufacturers, and the Pennsylvania legislature will be asked to grant relief from some of the hobbling provisions of the work hour law.

The labor situation in itself is sufficient to justify the prediction that prices of manufactures will go higher. Mine operators would not be surprised at $12 coal before the snow flies. This is no extravagant guess, considering advances of 20 to 30 per cent in miners' wages and the practical assurance of an all around 15 per cent increase in freight rates.

Even at higher prices, hosiery will be as scarce as at present. Enlistments already are telling heavily on mills' labor supply, and as these continue or conscription is enforced the situation will become more perplexing. It is extremely doubtful whether merchants instituting proceedings in the courts to enforce delivery would get a hearing, with mills able to show that operations had been restricted by the responses to the call to arms. It therefore would appear that manufacturers can well afford to await the convenience of buyers, and that the latter will have to yield to prices considerably higher than those being named in contracts entered into now.

This view is strengthened by the demand that will be made upon mills when the work of providing equipment for a million men is taken up seriously.

Thus far the government has been giving more attention to cloth than knit goods. It is estimated by mill executives that orders aggregating 13,000,000 yards of cloth have been placed since it became apparent that the United States would war on Germany.

The navy department has been finding fault with some of the hosiery acquired for that arm of the military service. An official of the department states that some of the hosiery in stock has developed free sulphuric acid, and suggests that in the future, specifications for bids provide a guarantee extending over three years. If in that period hosiery in stock shows a tendering or deterioration from aging, the parties supplying it must refund to the government an amount covering the cost of such hosiery. Manufacturers with whom the matter has been discussed say they would not care to submit bids if the contracts were to embody such a guarantee. So far as has been ascertained, the Department has not adopted the form suggested.

Mercerized hosiery has been in better demand in the last few weeks, and jobbers now are paying $2.40 for a line of 220 needle ladies' goods that opened around $1.90. A month ago these same jobbers could not be interested at $2.35. The prevailing quotation on this line is $2.50. Half hose 220 needle, carded yarn, single sole, are quoted around $1.00 to $1.05, sales being reported at 2½ cents less.

A variety of prices is heard for 176 needle goods, a jobber picking up a sizeable lot at 80 cents, whereas 95 cents is a fair market price. It develops that mills here and there which repudiated orders accepted last year at or about 75 cents, are delivering at 85 against new orders. A mill which recently opened its 220 needle women's mercerized at $1.90 for fall has marked the price up to $1.95. A similar grade from another maker is commanding $2.10.

Circular Rib Knitting Machinery

PRODUCTS

Underwear, Sweaters, Cuffs with Cut Welt, Selvage, or French Welt, Mantles, Collarettes, Toques, Golf Caps, Hosiery Tops, Skirts, Borders, Corset Covers, Button Stays, Mittens, Bandages.

FEATURES

Rectangular Slots, Hardened at Bottom, Sectional Caps and Cam Rings, Hardened and Ground surfaces, Sensitive Take-Ups, Two Speed Drive, Dogless Attachment, Positive Pattern Mechanism, Needle Guard and Protector, Automatic Stop Motions, Electric Cloth Cutters.

Characteristics

The characteristics of a knitting machine, like those of an individual, are determined by its origin and history; just as knowledge of the individual's family, schooling, and early life are desirable for the formation of an idea of his characteristics, so knowledge of the plant, personnel and ideals involved in the construction of the knitting machine are necessary for an understanding of its merits. Investigate the origin of our knitting machinery.

Wildman Mfg. Co.

ESTABLISHED 1889 **NORRISTOWN, PENN.**

Early in April some manufacturers were able to contract for mercerized yarns at exceptionally favorable figures. Twenty thousand pounds of 60's 2-ply were taken by a hosiery manufacturer at 96 cents while the ruling quotation was $1 to $1.05, and an underwear mill laid in even a greater quantity of 70's 2-ply at $1.10. Yarns at these prices promise a handsome profit when knitted into fabric for the fall season.

One of the very large northern hosiery manufacturers had advised jobbers to be in no hurry about covering for their mercerized requirements, stating that he would be in the market in due season, but not until he had broken the yarn market. Developments show that if he has not acquired yarn he will have to disappoint those jobbers who, acting on his advice, deferred their purchases. All the while this manufacturer was speculating on a drop another well-known operator was giving no attention to anything but gilt-edge business, while speculating on a rise. The latter still is bullish, taking only a fraction of the orders that are offered.

Probably an important factor in the better position of mercerized goods is the advance in silk and the proposition for a 20 per cent import duty on raw silk, which moved up 10 cents a pound in a week. All lines of silk manufacture are very active, sweaters in particular being in strong demand, and scarce.

The 1917 Exhibition and Convention.

Preparations for the big exhibition of the National Association of Hosiery and Underwear Manufacturers are so far advanced that it now is possible to outline with considerable definiteness most of the new features which were projected immediately following the success of last year's show, which was the most successful in the history of the Association.

In arranging for the occupancy of the exposition hall of the Commercial Museums it was necessary to get the consent of the Philadelphia City Councils. This was granted in the passage of a resolution by the Select and Common Councils, which provides for an expenditure of $7,000 or more by the Association in advance of the opening of the exhibition, May 7. The big hall must be wired to supply a 220-volt alternating current for power, this installation consuming a large quantity of copper wire.

Arrangements have been perfected by the exhibition management for showing the processes in converting cotton into knitted manufactures, ready for the wearer. Yarn will be spun in the exhibition hall and knitted into hosiery and garments for the body, serving in a way to convey some idea of the labor, expense and detail involved in manufacturing knit goods. Dyeing and finishing are to be carried on on a scale sufficiently large to show the complete processes. A battery of knitting machines will be presented in full operation, with a complement of ribbers and loopers, the whole presenting a scene common in a busy knitting mill, with nimble operatives engaged at their work.

The exhibition will present a greater range of dye and chemical products than ever shown in Philadelphia, this feature serving to show what American ingenuity and capital have accomplished in the development of the hitherto-neglected resources and providing for supplies for which, until the outbreak of the European war, textile manufacturers were dependent upon imports. Several dye and chemical corporations which were prompt to come to the relief of a very serious situation will be among the exhibitors, as will a few of those which prior to the war had established a business here either as manufacturers or importers.

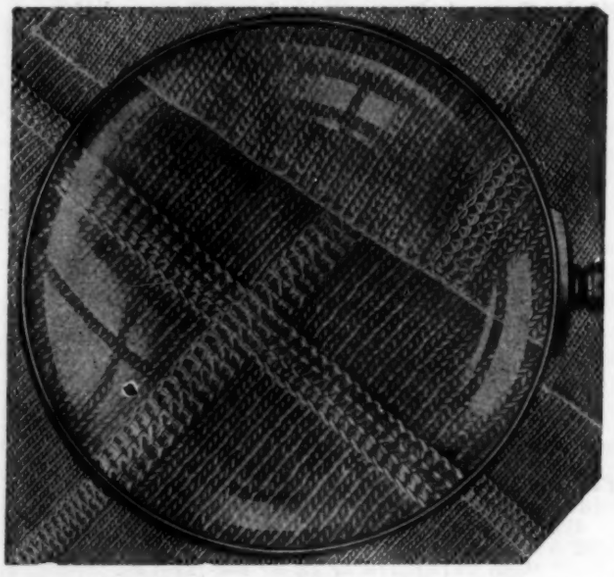
Down-to-the-minute models of knitting and sewing machines and the general line of machinery employed in the knitting industry will be shown by leading manufacturers, who are affording knitting mill heads practically the first opportunity of witnessing a demonstration of labor-saving and time-saving devices that have been brought out in the last year. Exhibitors are co-operating with the exhibition management for a cordial welcome to and hospitable treatment of visitors interested in the exhibit.

A splendid program has been prepared and the reunion this year (the thirteenth of the knitting fraternity family will embrace a dinner and vaudeville entertainment, each excelling in magnitude and importance any of the social features of previous exhibitions and conventions of the National Association of Hosiery and Underwear Manufacturers. Both affairs informal—men only at the dinner, but the ladies will be cordially welcomed at Keith's.

The Story of the Flatlock Seam.

The ultimate ideal running like a thread through the history of knit underwear has been, a seam which would partake of the elastic qualities of the fabric and yet be lost to the sense of touch. The imperative need was there. The demand was insistent. How to meet it was the problem that puzzled mill workers and inventors for many years until it had come to be generally recognized as insoluble.

The first "flannels" were woven, of cotton or wool as means permitted, and were home-made by our grandmothers, mothers and aunts. The seams were of varying kinds but they answered the purpose at the time, and if the joined edges did not project more than a quarter of an inch, the wearers were satisfied.



The first advance step was when undergarments were made on a knitting machine. They were full-fashioned, but their cost was prohibitive to the pocket-book of the average person.

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Rib Knitting Machinery

For Knitting the Latest Style Fabrics
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Jackets, Borders, Etc.
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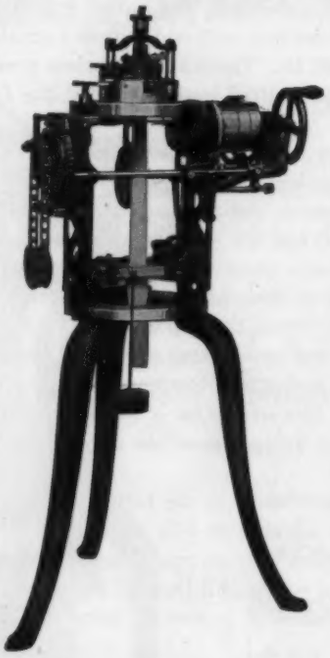

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Hosiery Ribbers
with the very latest attachments

Full Automatic Hosiery Footers

Body Machines Sleevers, Etc.
for Underwear, Sweaters, Toques, etc.

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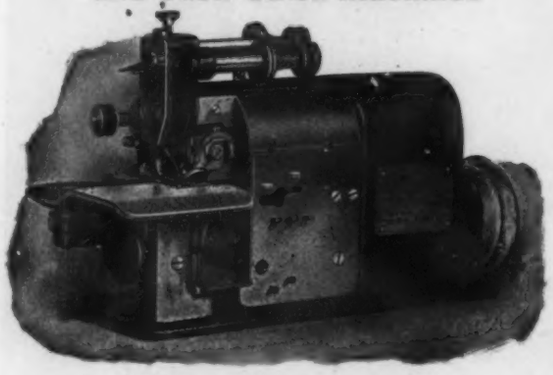
THE MERROW

High Speed Overseaming, Overedging and Shell Stitch Machines



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For Trimming and Overseaming in one operation produce the strongest seams with the greatest economy.
USE STYLE 60S for welting Stockings, blind stitch.
USE STYLE 60HD for hemming bottoms of Underwear.
USE STYLE 17B or 22 for Bed Blankets.
STYLE 18 is for Horse Blankets.

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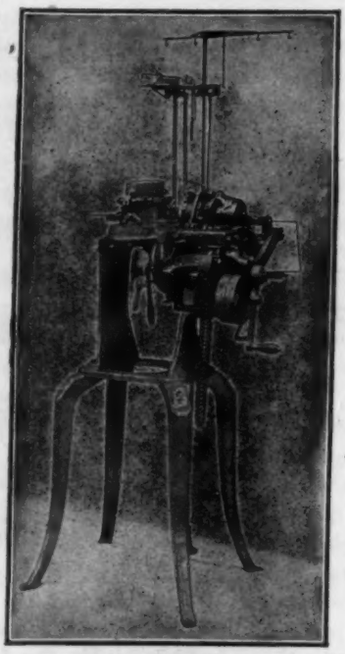
BOSS FULL AUTOMATIC KNITTER



It will make the neatest, most uniform and most perfect work, and is the most profitable of any knitter on the market.

It has the simplest Automatic Splicer in the world and never causes trouble. All parts are interchangeable. Compact and strongly built. Runs easily and breaks very few needles, seldom if ever requiring repairs.

So simple that an unskilled operator can learn to run it in a day.

The Boss Knitter means more production for the money than any other machine. Investigate.

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BOSS KNITTING MACHINE WORKS

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In the evolution of the industry another long step ahead was taken when garments were cut to length, from a long tube of seamless knit fabric, and seamed on a sewing machine. They had no side seams and were shapeless at the waist line. The best machine-made seam in those early days was the chainstitch which left a surplus of fabric projecting beyond the stitching. This was cut away by the hand-and-scissors method which produced good or bad results, according to the skill of the operator who held the scissors.

Many improvements were made from time to time in shaping and seaming knitted underwear, but no perfect seam appeared until the completed invention of the "Flatlock" abutted cut edge seam. About eighteen years ago the Flatlock seam was conceived and later the Flatlock machine upon which it was made was designed and developed by the engineering staff of the Willcox & Gibbs Sewing Machine Company.

The threads of this unique seam are so interlaced as to join the two edges of the fabric which have been accurately trimmed by automatic knives just in advance of the sewing operation, the cut edges (abutted, not lapped) being firmly held in a flat position, and securely locked by the stitches, which are made at the marvelous speed of 40 or 50 per second. The result is a flat, smooth, elastic, non-raveling seam, stronger than the fabric itself; in fact it is a friendly seam that will not irritate the flesh. It makes the garment equal in every sense to its full-fashioned cousin, and at such greatly reduced cost as to bring all its advantages to the millions, instead of the few.

The great advantage of the "Flatlock" seam on underwear for both comfort and wear was early recognized abroad, and for nearly two years the British War Office has demanded that seam on underwear for the soldiers in the trenches. Over sixty mills in Great Britain are now using Flatlock machines on government orders.

The United States Navy specifications, recently adopted, mention the Flatlock seam as follows:

"All seams to be flat and double seamed except where Flatlock seam is used. First or under seam to be made on an overlock or a double-thread machine, or a Flatlock seam like that used in samples of woolen underwear, which may be examined where standards are shown of this underwear; and where this Flatlock seam is not used, second or outer seam to be made with a zigzag or twin-needle stitch of first quality white cotton. All stitching to be secure and strong and not to ravel or pull out."

The foregoing refers to underwear for the navy, and is an amendment of specification "55 Ula.," Paragraph 6 of Schedule 873, dated April 3d, 1917, for 430,000 (about) light cotton undershirts. The specifications for Army underwear, adopted August 25, 1916, also specifies the Flatlock seam for soldiers underwear without requiring the second or over-seam.

Speed of Knitting Machines.

The great question of the speed of knitting frames and machines is but imperfectly understood by many manufacturers of hosiery and other knitted goods.

To begin with, many persons have very little knowledge of the causes which limit the speed of knitting machines, and the reasons why some machines can be driven safely at a greater speed than others.

In the first case the speed of a machine is dependent upon its class, build, and mechanical definition. Take, for instance, the first power-driven frames introduced into the trade, viz.: the straight-bar rotary frames. These machines, although power driven, were necessarily slow and cumbersome, and following, as they did, the exact movements of the hand frame, could not be driven with safety at any greater speed than a man could work a frame by hand and foot manipulation. The reason was obvious, the heavy and lengthy jacks and sinkers were retained, and the whole of the movements were long and necessarily somewhat jerky in order to properly position the loops on the needles.

Paget then introduced the horizontal needle bar and, consequently, materially shortened the motions, with the result that the speed was increased in spite of the mechanical crudeness of the actuating mechanisms.

Cotton then further increased the speed of straight-bar frames by improving and simplifying the motions, and by changing the position of the needles from horizontal to vertical, but the increase in speed was more due to improved mechanical definition than by the change in system, and, moreover, was not nearly so proportionately great as that obtained by Paget. Strictly speaking, Paget solved the problem of high-speed straight-bar machines, whilst Cotton rendered the machines mechanically perfect.

Even today the speed of straight-bar knitting machines is comparatively slow, nor is it likely to be improved, for the following reasons:

1.—The pressing, landing, and knocking over of the loops takes place separately, apart from and after the loops are formed.

2.—The rectilineal motion of the slur cock necessitates a change in the direction of the movement of loop-forming, i. e. the slur cock must strike in somewhat slower, and there is a pause at the end of each course to allow for the finishing of the loops which is performed collectively.

3.—The leverage action is long, and at high speed requires great rigidity which necessitates strong and, consequently, heavy operating parts.

The question of improving the speed of this class of frame has been studied carefully by various machine builders, and many attempts have been made to increase the speed without impairing the quality of the resulting fabric.

These attempts may be summarized as follows:

1.—To shorten the leverage action between the main cam shaft and the rocking shafts and between the latter and the catch bar and needle bar.

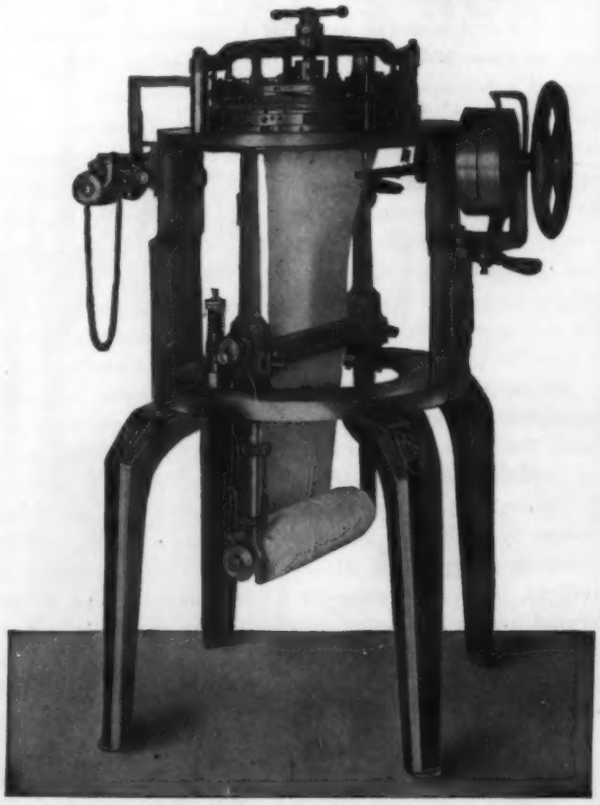
2.—To act on the sinker direct instead of through the intermediary of levers called guides.

3.—To introduce individual moving needles so that the course was finished at the completion of the draw.

4.—To add speed gears so that the speed could be varied according to the definition of the parts of garments which were being knitted.

No. 1 has been applied with some success, although the accessibility of the various parts has been impaired to some little extent, a point which should easily be overcome in the near future.

No. 2 has also been introduced with some success and the speed is slightly improved, although this is somewhat



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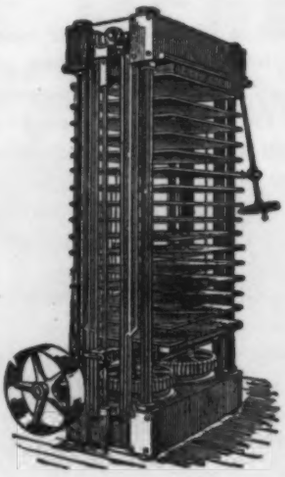

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HOSIERY FINISHING BOARDS.

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Manufacturers of

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All hosiery mills **WOULD BUY** our machines.

Write for our FREE TRIAL—SPECIAL PRICE—and SPECIAL TERMS—OFFER to mills that have none of our machinery in use.

counterbalanced by the great strain and consequent wear on the operating parts. This idea is by no means new, as it was carried out by Paget prior to the invention of the Cotton system of straight-bar frames.

No. 3 has never been very successful, as the quality of the fabric is not equal to those fabrics made on the standard type of machine, and, moreover, serious mechanical troubles have to be faced in connection with the fashioning operations, for it must be remembered that the straight-bar bearded needle frame stands or falls on its ability to produce fashioned work.

No. 4 has only been recently carried out, i. e., during the last few years, and has been found very effective in many cases, e.g., a plain frame may be driven at a high speed on the leg and foot, and at a slower speed when making the heel and instep divisions. A rib frame may be driven at top speed on the leg, and at the second speed during the making of the welt and heel divisions. The change in speed is invariably effected by the movement of the starting rod by the operator, and not mechanically by chain or other timing device.

A point that is often not fully realized in conjunction with the speed of straight-bar bearded needle frames is that the speed varies inversely to the fixed length of the draw. On consideration, this must be so, as the longer the draw the greater the arc of a revolution apportioned to the draw, for it is evident that the speed of the draw is limited to that at which perfect work is obtained, and, standardizing the speed of the finishing movements, it is evident that a longer draw requires less revolutions to give the same loop-forming speed per minute. Thus a hose-footer can be driven at least half as fast again as a pant frame. For this reason it is much more economical to keep a frame running, as far as is possible, up to the full width of the division, and hence it is not usual to foot hose on the same frame as the legs are made upon, although to save running-on, the upper or instep portion of the foot is often completed on the legging frame.

The trouble, of course, with frames of this type in increasing the speed when working on a part of the division only, is that the slur cock must traverse the whole of the division, but even assuming the slur cock could be withdrawn before the end of the full draw—a procedure offering no superlative mechanical difficulties—there is still the great difficulty to be overcome of having one variable movement, viz.: the draw and one fixed movement, the finishing motion, in one and the same course.

Hence, if a frame is required to make different widths it is necessary to introduce extra carrier guides in the one division and allow the slur to go the full draw. This is often carried out, especially on rib top frames, and the production is correspondingly enhanced.

With straight-bar machines employing latch needles—the so-called flat knitting machines, pearl machines, etc.—no difficulties are encountered in shortening the draw, as the loops are finished at the completion of the reciprocating action, so that the cams can be stopped and returned immediately they are clear of the needle butts.

These machines by means of the chain drive, can be driven for small or large widths, but even then it is not usual to change the speed of the drive, and the writer has yet to see a variable drive on the driving shaft of a power flat machine, yet, surely, as these machines are used for such a great variety of purposes, such a thing as a cone and countershaft drive, allowing, say, for three speeds might not altogether be considered impracticable.—*The Hosiery Trade Journal.*

Among the Knitting Mills.

The Southland Knitting Mills, of Macon, Ga., a front view of which is shown herewith, are busily engaged manufacturing ladies' fleeced knit underwear. Little slacking of business is reported because of the war conditions, although much difficulty is had in securing needles, which is

THE SOUTHLAND KNITTING MILLS.

the case with practically all knitting mills at the present time. This mill is under the active management of General Manager J. W. Hanson. The product of the mills is bleached and finished at the plant and packed ready for the distributors' hands.

The Westminster (S. C.) Knitting Mill was recently started up. This mill has been idle for several years, and formerly manufactured full and seamless hosiery with an equipment of 60 knitting, 10 ribbing, 15 looping and 2 sew-

THE OFFICERS OF THE SOUTHLAND KNITTING MILLS. LEFT TO RIGHT, MERRITT THURMAN, TREASURER; J. W. HANSON, GENERAL MANAGER, AND R. L. SMITH, PRESIDENT.

ing machines. A report states that P. N. Barnes of Marietta is to be superintendent and manager, and that P. A. Brown of Americus, Ga., is secretary.

Hosiery in the gray will be manufactured by the E. H. Emory Co., East Durham, N. C., details of the organization of which have previously been printed in these columns. Fine 14's to 30's single yarns, carded and combed, will be purchased. The company is also interested in securing additional knitting machinery to augment its initial equipment

of 24 knitting and 4 sewing machines, operated by a force of 15 operatives. Production began March 15, under the management of J. H. Holifield, superintendent. E. H. Emory is president and C. L. Higbee, treasurer and buyer. The product is sold direct.

It is reported that several well known cotton mill men of High Point, N. C., and Danville, Va., have purchased the site of the old Powhattan Mills at Randleman, N. C., with the intention of erecting a knitting mill on the property.

It is locally reported that a new knitting mill is to be built at Ashboro, N. C., and stock is being subscribed preparatory to the organization of the company early in the summer.

The Drexel Knitting Mills at Drexel, N. C., are building an addition 100 feet long to their present plant. They are also operating day and night shifts.

Announcement has been made that the Birmingham, Ala., branch of the Buster Brown Hosiery Mills is to be enlarged. Machinery has been purchased that will increase the number of employees from 80 girls now employed to approximately 200.

The Lynchburg (Va.) Hosiery Mills will build a 65x40-foot addition and install machinery to increase the plant's daily output, the entire cost to be $15,000.

At a meeting of the Mooresville, N. C., Chamber of Commerce recently, plans were proposed for the organization of a knitting mill and a committee was appointed to see how much local stock can be secured.

The Melrose Knitting Mills Co., of Raleigh, N. C., manufacturers of ribbed underwear, will start the work of construction this month on an addition to its plant. A tower is to be erected for the offices and main entrance, by which the floor space now used by the office force and entrances can be utilized in placing new additional machinery. An increase of 25 per cent in equipment is planned.

The Baltimore Knitting Co., 801 West 36th street, Baltimore, Md., advises that the plant has been sold and the business discontinued. The company produced high grade hosiery, and its officers were: W. O. Horsey, president; D. C. Scott, vice president, and E. J. Daniels, secretary and treasurer.

The Pioneer Hosiery Mill has moved from 810 Windsor street to Eleventh and Windsor streets, Reading, Pa. William B. Seidel, who now controls the entire interest in the company, has plans for doubling the former equipment, which consisted of 36 latch needle knitting machines, 12 ribbers, 6 sewing machines and 8 loopers. Men's seamless cotton hosiery is manufactured.

Stanton & Davine, of Chattanooga, Tenn., will establish a hosiery mill at Scottsboro, Ala. Local citizens have subscribed $24,000 for the new enterprise.

The Clinchfield Hosiery Mills, Bristol, Va., has been incorporated with Sherwood E. Hall, president, and Edward C. Bailey, secretary, both of White Plains, New York.

A 112x40-foot addition will be erected to the plant of the Dayton, Tenn., Hosiery Mills.

The equipment, good will and business of the Saxony Knitting Mills, Hawley, Pa., have been purchased by the Supreme Knitting Co., with New York office of 104 East Twenty-fifth street, and the plant has been moved to larger quarters in the Star Rink Building on Church street. New machinery is to be added, which will greatly increase the mills' capacity. The new mill will be run under the name of the Supreme Knitting Co., and will have no connection with a concern now doing business in Hawley under the name of the Saxony Knitting Mills.

Scott & Williams, of Boston, the well known manufacturers of knitting mill machinery, will open a Southern office in the Independence Building, Charlotte, N. C., about May 1st. They are doing a large business in the South, and as the southern knitting industry is growing very rapidly, they deemed it advisable to open a southern agency. The Charlotte office will be in charge of F. H. Richardson.

J. S. Hall, H. J. Smith, both of Dalton, and R. L. Wescott, of Lafayette, Ga., will organize a company to establish a plant at Dalton, Ga., with daily capacity, 550 dozen pairs of hose. A building has been leased, and arrangements are now being completed for the necessary equipment of machinery. This company will have a capital stock of $25,000, with privilege of increasing to $50,000.

M. M. Hise, manufacturer of farmers' and mechanics' toweling goods at Stithton, Ky., is considering the establishing of a hosiery mill for the manufacture of plain hosiery.

Herbert T. Mason has established the Blackwood Hosiery Mills in Blackwood, N. J., for the manufacture of 220-needle, fine gauge hosiery for women. The equipment comprises 80 knitting machines, housed in a new building, and the plant is operated by electric power. Combed yarns, single 30s, will be purchased.

Calton Manufacturing Co., Spartanburg, S. C., has organized with the election of the following officers: Arch B. Calvert, president; A. M. Hamilton, general manager. This is a new corporation recently mentioned as chartered with $20,000 capital, and it is planning to build a knit goods mill.

An addition which will afford 20,000 additional feet of floor space is to be erected by the Utica Knitting Co., Utica, N. Y. The new building will be 117 x 53 feet, three stories high, and the total cost of construction will be approximately $23,000. Fleeced lined, rib and flat cotton underwear and 8's to 30's yarns are manufactured, the equipment at last report consisting of 12 sets of woolen cards, 13,600 woolen spindles, 36,000 cotton spindles, 132 spring needles, 195 latch needles and 8 flat knitting machines.

Scott & Williams Expand.

The New Jersey corporation of Scott & Williams, Inc., the well-known knitting machinery builders, has been taken over by a Massachusetts corporation of the same title, retaining the old executive and managerial heads, but having larger capital and new financial interests.

The active management of the company will devolve as heretofore upon Messrs. Scott Reynolds and Harry Swinglehurst, the latter having been promoted to general manager of the company.

It is understood that the new Scott & Williams, Inc., has plans for a large expansion of its business not only in the domestic market, but abroad. Considerable plant expansion is also probable, as the company is now producing twice as many machines as it was a year ago, yet is far behind its orders. Scott & Williams was established in 1865, and was organized under New Jersey laws as Scott & Williams, Inc., in 1910.

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Make your roofing expenditures a matter of investment only, and not continuous repair bills. Patterns suitable for all classes of buildings, from ornate mansions to humble operatives' cottages. All that could be desired in roofing at comparatively small cost.

And they are fire-proof.

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50% Better than ever from YOUR Standpoint

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It will cut your cloth—fold the edges—roll it up and give you an exact measurement of every piece of cloth going through the machine.

It saves time, labor, machines and cloth.

YOU ONLY NEED ONE MACHINE where before it required two, and you get an extra strip from every bolt of cloth.

It cuts the corners of expense in every way and leads to more and greater profits.

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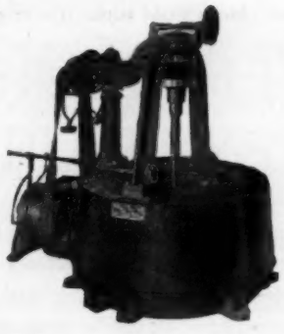

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Knitting Needles and Needle Manufacture.

The needle question is one of the present issues of the industry, and many differences of opinion have been expressed from time to time, but few have noted the chief point of "What is a needle?" as used in the knitting industry.

It is particularly instructive to note that even from the earliest records of the industry the needle seems to have been separated from the machine insomuch that few machine builders made the needle they used in the machines they built or even in those they invented. It is the writer's opinion that it is due to this fact that the present trouble exists. No explanation seems to be given as to why the production of the needle and machine should be separated, the needle is the chief part of the machine, and on it depends success. Why, then, should it be separated from the machine? Who should know better what a needle means to the success of his machine than the machine builder? Still he usually entrusts this important part to others. The present day machinist may urge that it has never been the bsuiness of the machinist to make needles. Be this as it may, the fact remains that needles have, in not a few instances, been made by some makers who did not understand the minor principles of knitting or knitting machines—making needles without knowing the details of their requirements.

It should be noted here that to-day many machine builders are making needles, and needle makers are studying more the requirements of the needle.

In the early days of the bearded needle frame, even from its invention in 1589, the needle and frame were apparently separated, for no records are given referring to needle manufacture, and a needle was spoken of as such. It is known that later even the old stockinger had to buy his own needles, and that needle making was a small home industry. This was practically the case up to the invention of the Cotton's patent, when requirements were greater, and then we find a few needle manufacturers springing up to meet the demand.

The invention of the latch needle in 1849 brought about new ideas. Here was a needle that required far more detail and accuracy in manufacture. The inventor of the needle of necessity turned to the needle makers for assistance, and the first set of latch needles that ever worked were made by a then well-known firm of needle makers apart from the builder of the machine in which they were to work.

Wherever the latch needle machine was built, whether in America or on the Continent of Europe, latch needles were required; so with the machine came the demand for needles, and when needles were required on the Continent or elsewhere needle makers sprang up to make them, and it is no doubt due to those enterprising needle makers, who saw the possibilities of an export trade and increased their businesses beyond the requirements of their own home markets, at the same time taking such interest in needle making as to produce as good, if not better, needles than were being made in the markets they set out to capture, that their success was assured.

It is now two years since the British knitting industry became dependent upon its internal resources for obtaining those previously under-rated but essentially fundamental parts known as needles. In that time much has been done, many lessons have been learned, but the sum total of the position cannot be regarded as satisfactory.

Most of the British needle manufacturers have at least doubled their output, new firms have arisen, but the purely British supply is even now considerably less than the insatiable demand. Those firms new to needle making have by no means found the manufacture of hosiery needles "a bed of roses," in spite of the enhanced prices, and the older manufacturers, suffering perhaps from transferred labor and acute demand, have found that increased production has been by no means easy and without worry.

As an elusive, simple-looking piece of mechanism, the hosiery needle is a typical example of "things are not always what they seem." Time after time engineers have declared that the production of the hosiery needle and the necessary needle making machines would be quite an easy matter, but those engineers who have actually been engaged with the trade have had serious reasons to modify this assertion.

Many firms, new to the trade, have experienced several troubles, although they have produced—in a mechanical sense at all events—good needles.

Why? Because the making of a hosiery needle is a specialized industry, and the knowledge of the technology of knitting is bound up in its manufacture.

(To be continued.)

Special Exhibition in Philadelphia.

Deviating from their usual custom, the Union Special Machine Co. will not exhibit their machines for the finishing of underwear and knitted goods in connection with the annual convention and exhibition of the National Association of Hosiery and Underwear Manufacturers, May 7th to 11th. They state that largely because of the confusion and turmoil which attends important conventions of this kind and the large number of disinterested spectators who are continually swarming through the exhibition, it has been decided to hold this display of their machines at their new offices and show rooms, 12th and Arch streets, Philadelphia. The fact that these offices are so centrally located, gives visiting members of the association an opportunity to examine, at their leisure, such machines as they are interested in with more precision than is possible at a public exhibition. The Union Special Machine Co. will be able to give more attention to the individual and meet their customers and friends with the same spirit which has attended the regular convention held by the association. There will be the usual display of high speed sewing machines for the many finishing operations upon knitted goods.

A cordial invitation is extended to all members of the National Association of Hosiery and Underwear Manufacturers to make their headquarters in the new offices of the Union Special Machine Co., in Philadelphia during the Convention week, where an endeavor will be made to make their stay both pleasant and profitable.

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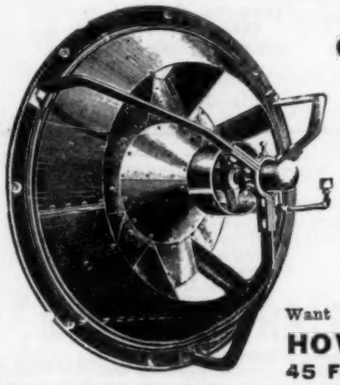

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Textile Finishing Machinery Co.
Wildman Mfg. Co.
Windle, J. E.

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Reliance Machine Works.

Cloth Tubes.
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Cloth Winders.
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Clutches (Friction).
Caldwell Co., W. E.
Cork Insert Co.
Hunter Mch. Co., Jas.
Link-Belt Company.
Seeger-Walraven Co.
Transmission Ball Bearing Co.

Coal & Coke.
Chesapeake & Ohio Coal & Coke Co.

Coal Driers (Centrifugal).
Link Belt Company.

Coal Handling Machinery.
Hunt Co., C. W.
Link-Belt Company.

Coal Tar Disinfectants.
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Lunkenheimer Co.

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(See Dyestuffs and Chemicals.)

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Commission Merchants and Dealers.
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Compressors (Air).
Allis-Chalmers Mfg. Co.
General Electric Co.
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Condensers.
Allis-Chalmers Mfg. Co.
Seeger-Walraven Co.

Cones (Paper).
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Philadelphia Textile Machinery Co.
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Schofield, Wm. Co.
Seeger-Walraven Co.
Smith & Furbush Mach. Co.

Coolers.
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Cooling Spray (Condensing Water).
Spray Eng. Co.

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Cordage Machinery.
Saco-Lowell Shops.
Smith & Furbush Mach. Co.
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Cork Insert Pulleys.
(See Pulleys—Cork Insert.)

Cottages (Metal).
Canton Metal Ceiling Co.

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Armory Browne & Co.
Fawcett, Hughes.
Paulson, Linkroum & Co.
Salkeld & Bro. A. D.
Weimer Bros.
Woodward, Baldwin & Co.

Cotton Dealers and Brokers.
Beer, H. & B.

Cotton Machinery.
American Supply Co.
Barber-Colman Co.
Butterworth & Sons, H. W.
Cocker Mch. & Foundry Co.
Columbus Truck & Supply Mfg. Co.
Cramer, Stuart W.
Crompton & Knowles Loom Wks.
Delahunty Dyeing Machine Co.
Draper Corporation.
Firsching, J. A.
Howard & Bullough.
Hunter Mch. Co., Jas.
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Phila. Textile Machy. Co.
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Stafford Co., The
Textile Finishing Machinery Co., The
Whitinsville Spinning Ring Co.

Coupling—Rope.
Hunt Co., C. W.

Counters (Speed-Measuring).
The Foxboro Company.

Counters—Revolution, Hank, Pick, Etc.
National Scale Co.
Root Co., C. J.
Veeder Mfg. Co.

Cranes (Locomotive).
Link-Belt Company.

Crayons.
American Crayon Co.
Dixon Crucible Co.

Crushing Machinery.
Allis-Chalmers Mfg. Co.

Cuspidors.
Baylis Office Equip. Co.

Cutters (Cloth).
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Cylinder Roll Grinders.
Roy & Son Co., B. S.

Dies (Steel).
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Disinfectants.
Barrett Co., The.

Dobby Chains.
Crompton & Knowles Loom Wks.

Doffing Boxes (Mill).
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Draft Gauges and Thermometers.
Taylor Instrument Co.

Drawings of Mills.
Shutting Co., R. J.

Drawing Frames.
Howard & Bullough.
Saco-Lowell Shops.

Drills—Electric.
Western Electric Co.
Westinghouse Elec. & Mfg. Co.

Drinking Fountains.
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Drying Machinery.
Butterworth, H. W. & Sons Co.
Cocker Mch. & Foundry Co.
Hunter Mch. Co., Jas.
Phila. Drying Machy. Co.
Phila. Textile Machy. Co.
Salem Iron Works.
Sargent's Sons Corp., C. G.
Textile Finishing Machinery Co., The.

Dust Collectors.
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Dusting Machinery.
Schofield Co., Wm.
Smith & Furbush Mach. Co.

Dyers, Bleachers and Finishers.
Aberfoyle Mfg. Co.
Franklin Process Co.
Home Bleach & Dye Works.

Dyeing, Bleaching and Finishing Machinery.
Allen Sons Co., Wm.
American Laundry Mchry. Co., The.
Butterworth & Son Co., H. W.
Cocker Mch. & Foundry Co.
Columbus Truck & Supply Mfg. Co.
Delahunty Dyeing Machine Co.
Electro Bleaching Gas Co.
Electro Chemical Co.
Firsching, J. A.
Franklin Process Co.
Hunter Mch. Co., Jas.
Klipstein & Co.
Leigh & Butler
Phila. Drying Machy. Co.
Phila. Drying Machinery Co.
Phila. Textile Machy. Co.
Reliance Machine Works.
Roy & Son Co., B. S.
Salem Iron Works.
Smith, Drum & Co.
Textile Finishing Machinery Co., The.
Tolhurst Machine Works.
Worcester Steam Boiler Works.

Dye Sticks.
Phila. Drying Machinery Co.

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Aberfoyle Mfg. Co.
Arabol Mfg. Co.
Baltic Chemical Co.
Bayer Co.
Bosson & Lane.
Brown & Bro., B.
Cone, Frederick H.
Dicks David & Broadfoot, Inc.
Electro Bleaching Gas Co.
Gismond & Co., Inc., Jas. G.
Holland Aniline Co.
Kali Mfg. Co.
Klipstein & Co., A.
Lewis, John D.
Madero Bros.
Marden, Orth & Hastings Co.
Metz & Co., H. A.
Miller, Jos. B.
National Aniline & Chemical Co.
Seydel Mfg. Co.
Sykes & Co., Walter F.
Wolf & Co., Jacques.

Electric Dynamos and Motors.
(See Motors and Generators.)

Electric Lamps.
(See Lamps.)

Electrical Machinery and Supplies.
Allis-Chalmers Mfg. Co.
Economy Fuse & Mfg. Co.
General Electric Co.
Lincoln Elec. Co.
Seeger-Walraven Co.
Walsh & Weidner Boiler Co.
Western Electric Co.
Westinghouse Electric & Mfg. Co.

Electric Trucks (Inter-Transportation).
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Elevators
Collins, J. D.
Hunt Co., C. W.
Link-Belt Company.
Seeger-Walraven Co.

Enamel (Mill White)
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Engineers, Consulting.
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Engines (Oil, Gas and Gasoline).
Seeger-Walraven Co.

Engines (Steam).
Allis-Chalmers Mfg. Co.
Collins, J. D.
Lombard Iron Works & Supply Co.
Schofield's Sons Co., J. S.
Seeger-Walraven Co.
Toomey, Frank.
Walsh & Weidner Boiler Co.

Engine Appliances (Oil & Steam).
Lunkenheimer Co.

Expanders (Cloth).
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Extractors—Hydro.
American Laundry Mchy. Co. The
Tolhurst Machine Works

Fans—Electric.
Allis-Chalmers Mfg. Co.
General Electric Co.
Howard & Morse.
Lincoln Electric Co.
Western Electric Co.
Westinghouse Elec. & Mfg. Co.

Fans—Conveying, Power and Exhaust.
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Feed Water Purifiers.
(See Water Softeners.)

Felting Machinery.
Smith & Furbush Mach. Co.

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Anchor Post Iron Works.
Chattanooga Iron Works.
Cyclone Fence Co.

Filing Cabinets & Systems.
Baylis Office Equip. Co.

Filters (Water).
(See Water Softening.)

Finishing.
(See Dyers, Bleachers and Finishers.)

Finishing and Sizing Materials.
Aberfoyle Mfg. Co.
American Soap & Washoline Co.
Baltic Chemical Co.
Bosson & Lane.
Brown & Bro., B.
Cone, F. H.
Corn Products Refining Co.
Electro Bleaching Gas Co.
Electric Smelting & Alum. Co.
Kali Mfg. Co.
Klipstein & Co., A.
Madero Bros.
Marden, Orth & Hastings.
Metz & Co., H. A.
National Aniline & Chemical Co.
Parsons-Barr Co.
Seydel Mfg. Co.
Warren Soap Mfg. Co.
Wolf & Co., Jacques.

Fire Extinguishers.
Fyr-Fyter Co.
Missouri Lamp & Mfg. Co.
Pyrene Mfg. Co.

Fire Hose.
(See Hose—Fire).

Fire Protecting Paint.
(See Paint—Fireproof.)

First Aid Room Equipment.
(See Hospital Equipment.)

Fluted Rolls.
Howard & Bullough.
Saco-Lowell Shops.
Schofield's Sons Co., J. S.
Smith & Furbush Machine Co.
Southern Spindle & Flyer Co.

Flyers.
Howard & Bullough.
Leigh & Butler.
Saco-Lowell Shops.
Southern Spindle & Flyer Co.

Folding Machines (Cloth).
Windle, J. E.

Fountains—Drinking.
Manufacturers Equip. & Eng. Co.
Rundle-Spence Co.

Friction Clutches.
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Fulling Mills for Woolen Goods.
American Laundry Mchy. Co.
Hunter Machine Co., Jas.

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Manufacturers Equip. & Eng. Co.
Baylis Office Equip. Co.

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Economy Fuse & Mfg. Co.
General Elec. Co.
Western Electric Co.

Garnett Grinders.
Roy & Son Co., B. S.

Garages (Metal Portable).
Canton Metal Ceiling Co.

Garnett Machines.
Hunter Mch. Co., Jas.
Leigh & Butler.
Smith & Furbush Mach. Co.

Gas Engines.
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Gaskets—Fibre.
Diamond State Fibre Co.

Gaskets—Rubber.
Goodrich Co., B. F.

Gauge Cocks.
Lunkenheimer Co.

Gauges (Draft).
Taylor Instrument Co.

Gauges (Mercury Column Vacuum)
Taylor Instrument Co.

Gauges (Mercury Column Absolute Pressure).
Taylor Instrument Co.

Gauges (Oil).
Lunkenheimer Co.

Gauges (Water).
Lunkenheimer Co.

Gears (Silent).
Diamond State Fibre Co.
General Electric Co.
Western Electric Co.

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Cresson-Morris Co.
Whiton Mch. Co., D. E.

Generators (Electric).
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Glass (Wire).
Mississippi Wire Glass Co.

Grain Bags.
American Supply Co.

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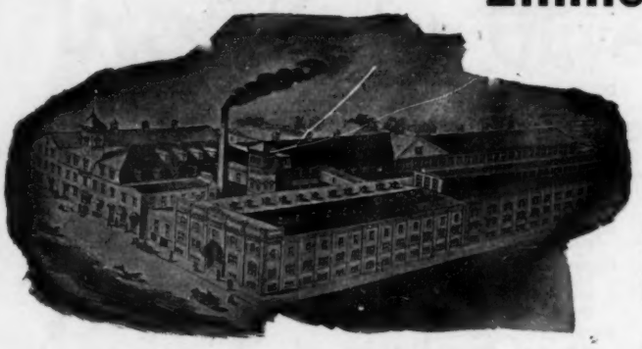
Collins, J. D.
Lombard Fdy. & Mch. Co.

Grease.
(See Lubricants.)

Emmons Loom Harness Co.



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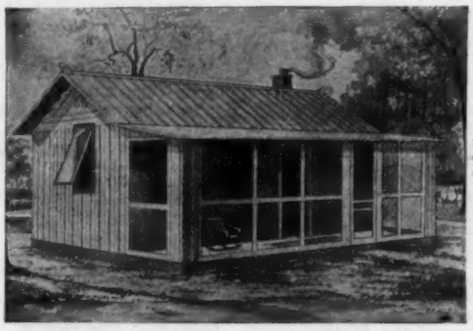

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Acme Gummed Products Co.

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Hydro Extractors.
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The Foxboro Company.

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Cyclone Fence Co.
Dufur & Co.
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Wildman Mfg. Co.

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Graton & Knight Mfg. Co.

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Boston Economy Lamp Div.
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General Electric Co.
Western Electric Co.
Westinghouse Electric & Mfg. Co.
Westinghouse Lamp Co.

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Dixon, Jos., Crucible Co.
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Kellogg & Co., E. H.
N. Y. & N. J. Lubricant Co.

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Lunkenheimer Co.

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Salkeld, A. D. & Bro.

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Aberfoyle Mfg. Co.
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Butterworth, H. W. & Sons Co.
Smith, Drum & Co.
Textile Finishing Machinery Co.
Wolf & Co., Jacques.

Metal Ceilings, Etc.
Canton Metal Ceiling Co.

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Meters (Flow, Air, Gas, Steam).
Allis-Chalmers Mfg. Co.
General Electric Co.
Lincoln Electric Co.
Western Electric Co.
Westinghouse Elec. & Mfg. Co.

Mill Baskets and Boxes.
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Mill Engineer.
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Mill White Paint.
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Millwrights.
Hunter Mch. Co., Jas.

Motors and Generators (Electric).
Allis-Chalmers Mfg. Co.
General Electric Co
Lincoln Electric Co.
Seeger-Walraven Co.
Western Electric Co.
Westinghouse Elec. & Mfg. Co.

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Transmission Ball Bearing Co.

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Roy & Son, B. S.

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Leigh & Butler.

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Baylis Office Equip. Co.

Oils—Finishing.
(See Finishing and Sizing Materials.)

Oils—Lubricating.
(See Lubricants.)

Oil Cups.
(See Lubricators).

Oiling Devices.
(See Lubricators).

Openers for Cotton, Wool, Waste Etc.
Leigh & Butler.
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Smith & Furbush Mach. Co.

Oxidising Machinery.
Phila. Drying Machinery Co.

Oxygen.
Bird Wilcox Co.
Burdett Oxygen Co.
Prest-O-Lite Co.

Packings—Leather.
Graton & Knight Mfg. Co.

Packings—Rubber.
Goodrich Co., B. F.

Paint.
Arco Co.
Barrett Co., The.
Certain-teed Products Corp.
Chaffee, Thos. K.
Ullman-Philpott Co.
Wadsworth-Howland & Co., Inc.
Wolf Paint Co., Leon L.

Paint—Fireproof.
Arco Co.
Certain-teed Products Corp.
Wadsworth-Howland & Co., Inc.
Wolf Paint Co., Leon L.

Paint—Mill White.
Arco Co.
Chaffee, Thos. K.
Ullman-Philpott Co.
Wadsworth-Howland & Co., Inc.
Wolf Paint Co., Leon L.

Perforated Metal.
(See Screens and Sieves.)

Photographer of Mills.
Shutting Co., Rudolph J.

Picking Machinery.
Howard & Bullough, Am. Machine Co.
Saco-Lowell Shops.
Schofield Co., Wm.
Smith & Furbush Mach. Co.

Pickers—Curled Hair.
Schofield, Wm. Co.
Smith & Furbush Mach. Co.

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Hubbard Mch. Co.

Pickers—Leather.
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Lunkenheimer Co.

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Cork Insert Co.
Cresson-Morris Co.
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Freadrich Belting Co.
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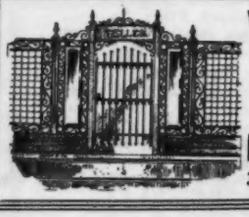

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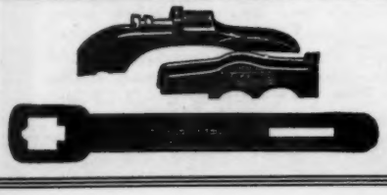

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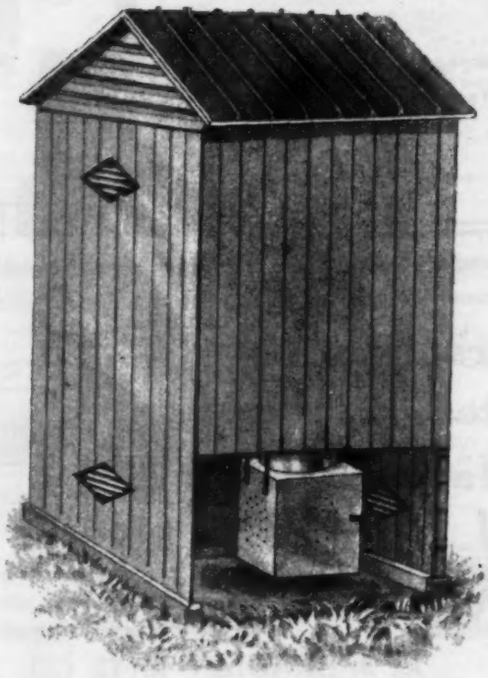

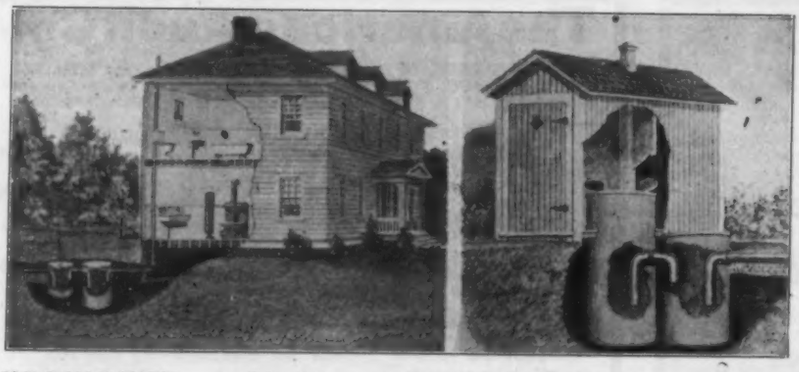

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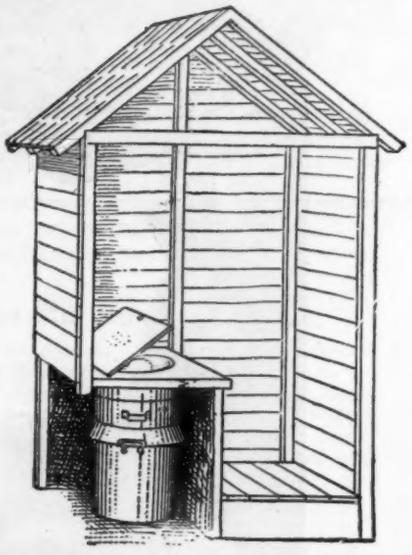

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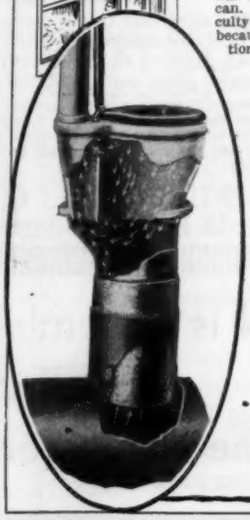
Kaustine WATERLESS TOILETS and URINALS

will solve your problem as no other toilet installation can. The Kaustine System overcomes the usual difficulty of sewage disposal and plumbing connections—because Kaustine Toilets require no water for operation.



For this reason the Kaustine System is the best and most economical one—and the only one for the small, unsewered town.

Every feature of Kaustine equipment is perfect in construction. Waste matter passes through pipe to large "Armco" Tank, where Kaustine, the chemical, disintegrates and de-odorizes it. Perfect ventilation and impossibility of clogging insure cleanliness. Nothing to get out of order.

Multiple Installations

The low cost of Kaustinizing your mill or group of colony houses will surprise you. Our experts will gladly undertake the problem of most effective installation. Why don't you write us for literature and suggestions?

KAUSTINE is endorsed by leading health authorities.

KAUSTINE CO., Inc.,
Dept. 1140 Buffalo, N. Y.
858 Dupont St. West, Toronto, Ont.
467 Sixth St., Oakland, Cal.

Analyze Your Mediums Through The A. B. C.

The days of circulation guessing have gone by the board. Today the advertiser insists upon having facts right before him before he adds a publication to his list. Whether a medium represents quality or quantity, the advertiser has three vital questions to ask before adopting it:

How Many? — What Class? — Where Distributed?

"A. B. C. Service" gives the advertiser this information in a uniform, standardized, comprehensive form. It not only tells him the net paid circulation and where it is distributed, but gives a detailed analysis from which he may determine its adaptability to the advertising of his product.

"A. B. C. Service" eliminates guess work, and places space buying on a commodity basis.

The Audit Bureau of Circulations is a co-operative organization—not for profit—its membership includes over one thousand Advertisers, Advertising Agents and Publishers, in the United States and Canada, who believe in standardized circulation information. Complete information regarding the service and membership may be obtained by addressing—Russell R. Whitman, Managing Director.

AUDIT BUREAU OF CIRCULATIONS
15 East Washington Street, Chicago

COTTON is a member of the Audit Bureau of Circulations.

Copy of the last statement sent upon request.

You Can't Afford to Miss This Convention

You're not going to let war or any other reason keep you away from the St. Simons Convention. You owe it to your business, as well as to your pleasure, to attend and bring your wife and family, to the annual convention of the

Cotton Manufacturers' Association of Georgia, June 8th, 9th and 10th.

You will enjoy and derive much benefit from the talks and speeches at every session. You will rub shoulders with nearly every textile manufacturer in Georgia, for they're all going to be there unless they're sick in bed.

The convention will be held at the New St. Simons Hotel, one of the best beach resorts in the South. Here you can give yourself, your wife and family an outing they will enjoy to the utmost. Numbers are making reservations for a week and longer.

Hotel operated on American plan exclusively. Finest bathing beach, life guards, orchestra, dancing instructors and entertainers. Address reservations to Manager

THE NEW ST. SIMONS HOTEL, ST. SIMONS, ISLAND, GEORGIA

An ideal spot for your vacation or summer home.

Meet me at the Tuller for Value, Service, Home Comforts

New HOTEL TULLER

Detroit, Michigan.

Center of business on Grand Circus Park. Take Woodward car, get off a Adams Avenue.

ABSOLUTELY FIREPROOF

200 Rooms, Private Bath, $1.50 Single, $2.50 Up Double
200 " " " 2.00 " 3.00 " "
100 " " " 2.50 " 4.00 " "
100 " " " 3.00 to 5.00 " 4.50 " "

Total 600 Outside Rooms.

ALL ABSOLUTELY QUIET

Two Floors—Agents' Sample Rooms

New Unique Cafes and Cabaret Excellente

IN THE HEART OF THINGS

The House of Taylor

400 Baths 600 Rooms

HOTEL MARTINIQUE

Broadway, 32d St., New York

One Block from Pennsylvania Station. Equally Convenient for Amusements, Shopping or Business.

157 Pleasant Rooms, with Private Bath,
$2.50 PER DAY

257 Excellent Rooms, with Private Bath, facing street, southern exposure,
$3.00 PER DAY

Also Attractive Rooms from $1.50.

The Restaurant Prices are Most Moderate.

Hotel Lenox

THE Lenox has long been famed as a hotel where guests are made to feel at home. If you ever visit aristocratic old Boston, make the Lenox your rendevous and you'll enjoy your stay.

It is situated within a short distance of the business, shopping and theatre districts, and is in close proximity to all railroad stations.

Single Room with Bath
$2.50 to $4.00
Double Rooms with bath
$3.50 to $5.00

L. C. PRIOR,
Managing Director.

Boston

Mr. Glancy
of
The MARQUETTE
18th St. and Washington Ave.
St. Louis

A Refined Hotel for Your Mother, Wife and Sister

Rates:
Room with Private Bath
One Person
$1.50, $2.00, $2.50, $3.00
Two Persons:
$2.50, $3.00, $3.50, $4.00
Rooms without bath, $1 and $1.50

TO THE

Manufacturer and Distributor

Abundant supplies of coal, coke, iron, timber and other raw materials lie in the regions of Georgia and Alabama which are traversed by the

Central of Georgia Railway

Cheap electric power, numerous undeveloped waterpowers, good home markets and excellent shipping facilities. Therefore, manufacturing conditions are ideal.

Many of the cities on the Central of Georgia Railway occupy advantageous positions for distributing warehouses and a number of the larger northern and eastern manufacturers supply their southeastern trade from branch houses in these cities.

Full and detailed information upon application

J. M. Mallory, Industrial Agent
Savannah, Ga.

The West Point Route

A. & W. P. R. R. Co. The W. Ry. of Ala.

to

California, Texas, Mexico and the West.

CHEAPEST RATES

3——Trains Daily——3

Call at City Ticket Office, No. 80 Peachtree Street, or write for fares and full information.

J. P. BILLUPS,

General Passenger Agent, Atlanta, Ga.

WANTED
Hosiery or Underwear Mill.

In a good South Carolina city, on the main line of the Southern Railway System, there is an opening for a hosiery or underwear mill. Yarns may be had from spinning mills in the place or in the immediate section. There is available a good class of labor. A large part of the necessary capital will be furnished by citizens, if the proper party can be found to join in the industry. This is a live opportunity which should appeal to a practical man with capital. For particulars refer to File No. 35155.

M. V. RICHARDS, Commissioner,
Room 131 Southern Railway System,
Washington, D. C.

Georgia Railroad

EFFICIENT AND RELIABLE

Passenger and Freight Route

Ample Train Service and good connections.

Elegant road bed and superb equipment.

Special Fares for special occasions very often in effect.

Ask the Georgia Railroad Agent for rates and schedules.

J. P. BILLUPS
General Passenger Agent, Atlanta, Ga.

FERTILE LANDS.

Well located and accessible to good highways with splendid railroad facilities may be had for $10.00 per acre and up—all over South Georgia.

The climate and soil greatly favor the vegetable grower over other sections—the growing season is 250 days.

Hogs and cattle can be raised more cheaply in South Georgia than anywhere in the South. The mild winters and native grasses make this possible. Local packing houses offer a permanent dependable market at Chicago prices every day in the year for hogs and beef cattle.

Why pay more when you can purchase "as good" land for $10.00 per acre? South Georgia enjoys the best climate in the South.

Send for list of farms for sale along the A. B. & A. Railroad.

W. W. CROXTON,
General Passenger Agent
A. B. & A. RAILROAD CO.,
613 Austell Bldg.
Atlanta, Ga.

Commission Merchants, Yarn Dealers, Cotton Dealers and Brokers, Etc.

Weimar Bros.

Phone Connections
Works, 2046-48 Amber Street,
PHILADELPHIA, PA.

MANUFACTURERS OF
Cotton Mercerized Tapes, Spool Tapes, Bindings and Narrow Fabrics for Underwear and other Trades.

A. D. Salkeld & Bro.
COMMISSION MERCHANTS
COTTON AND WORSTED YARNS
366 BROADWAY Cor. Franklin St. NEW YORK
DEPT. FRED'K VIETOR & ACHELIS.

WOODWARD, BALDWIN & CO.
DRY GOODS
COMMISSION MERCHANTS
43-45 WORTH STREET, NEW YORK

HAVE THAT SAFE FEELING
When buying products advertised in COTTON, you can always have that safe feeling that each advertiser is reliable and lives up to the claims made in his advertisement.

PAULSON, LINKROUM & CO.
COMMISSION MERCHANTS
COTTON YARNS
PHILADELPHIA NEW YORK CHICAGO

Amory, Browne & Co.
Boston New York

SELLING AGENTS FOR

Nashau Manufacturing Company	Jackson Company
Indian Head Mills Alabama	Parkhill Manufacturing Company
Samuel A. Crozier & Son	Wauregan Company
Lancaster Mills	Lowe Manufacturing Co.
	Quinebaug Company

B. B. & R. Knight (Export only)

ESTABLISHED 1872

H. & B. BEER

NEW ORLEANS

HENRY BEER EDGAR H. BRIGHT
J. WILLIAM BARKDULL C. MORGAN ABRAMS

MEMBERS OF
New Orleans Cotton Exchange
New Orleans Future Brokers Association
New York Stock Exchange
New York Cotton Exchange
New York Coffee Exchange
New York Produce Exchange
Chicago Board of Trade

Associate Members of the Liverpool Cotton Association

Private Wires to Principal Points

HUGHES FAWCETT
IMPORTER AND COMMISSION MERCHANT
LINEN YARNS
For Weaving, Knitting and all Purposes
TURKEY RED YARNS
For Towel Borders, Towellings and Bleaching Cloth
Linen Jacquard Harness Twine
And Every Description of Linen Thread and Twine
115 Franklin Street, : NEW YORK

Classified Opportunities.

Positions Open.

WANTED—Hosiery machine fixer. We have Geo. D. Mayo, Acme Mayo and Scott & Williams machines. Write Carolina Mills Co., Winston-Salem, N. C.

WANTED—A live young man of ability possessing a textile education and practical experience to interest himself financially and take charge of the manufacturing end of an underwear and spinning mill to make men's garments exclusively. References exchanged. Address "Textile," P. O. Box 54, Knoxville, Tennessee.

Positions Wanted.

POSITION WANTED—As Superintendent by young man 29 years old and married. Has had 7 years experience in practical mill work as overseer of carding a large part of the time. Has also had charge of a combing department. Is familiar with the manufacture of combed yarns, both fine and coarse, and all American makes of machinery, as well as some foreign. Is now employed, but desires to change to secure improved position. Is a textile graduate of a Southern textile school, and is familiar with designing and fancy weaving. Address Box 367, care COTTON.

POSITION WANTED—As overseer of Spinning or Twisting, by a man with 13 years' experience in cotton mills, 9 years as overseer of spinning. Is 37 years old and married. Experience has been all on heavy yarns for the manufacture of heavy ducks. Familiar with Saco-Lowell and Howard & Bullough machinery. Is at present employed, but would be interested in a better position and could accept it on 10 days notice. Does not care to go outside of Georgia. Address Box 368, care COTTON.

POSITION WANTED as superintendent or manager. A man with wide experience, over 20 years in many large Northern mills, desires position, preferably in the South. Experienced on all kinds of plain and fancy goods, cotton, silk, linen, and some wool. Have acted as purchasing agent for a number of concerns and have taken charge of the erection and organization of mills for both fine and coarse yarns, combed and carded. Capable of doing designing where necessary. Familiar with all kinds of machinery and power plants. Very best of references exchanged. Address Box 312, care COTTON.

POSITION WANTED by Georgia mill man as superintendent. Have had 17 years experience on white and colored goods and all kinds of textile machinery. Now employed but desire to change to position where there is chance for promotion. References from several well known mill men. Age 35 and married. Address Box 93, care COTTON.

POSITION WANTED as Overseer of Spinning or Twisting, in some Georgia mill. Have had 13 years experience on all heavy duck, and with Saco-Lowell, H. & B. and other machinery. Good references. Married and 37 years of age. Address Box 97, care COTTON.

RATES:

WITHOUT DISPLAY.

"Positions Wanted" 3 cents per word per insertion. Minimum charge 50 cents. Payable in advance

"Positions Open" and other undisplayed advertisements, 4 cents per word per insertion. Minimum charge $1.00. Payable in advance.

(When replies are to be received in our care, allow four words for box address.)

DISPLAYED.

"For Sale" and all other advertisements using bold-face type or otherwise displayed, $2.00 per inch per insertion.

Rates for larger spaces furnished on application.

For Sale.

A BARGAIN IN FINE TOOLS

The following tools are from a private set and have seen little, and in some instances, no usage. The prices shown are the regular list price which will be discounted 33 per cent on single tools or a special price made on the whole outfit. Tools will be shipped by express C. O. D. with privilege of examination:

1 Starrett inside micrometer caliper, set A, No. 124, measuring from 2" to 8", $5.25.

1 Starrett inside micrometer caliper, set C, No. 124, measuring from 8" to 32", $8.00.

1 height gauge attachment, $1.75

1 Starrett micrometer depth gauge, $6.00.

1—4" Starrett micrometer caliper square No. 28, $11.75.

1 Brown & Sharpe Venier dept gauge, No. 600, $12.00.

1—8" Brown & Sharpe venier height gauge No. 585, $31.75.

1—8" Brown & Sharpe vernier caliper No. 570, $25.75.

1 Brown & Sharpe inside micrometer caliper No. 250—.200" to 1", $6.15.

1 Brown & Sharpe inside micrometer caliper No. 254, 1" to 2", $7.15.

1 lathe indicator with attachments, giving readings in 1/1000 and 1/2000 of an inch, $15.00.

1 High speed revolution counter, $6.00.

All these tools are in cases except the height gauge attachment.

Apply to Box 17, care SOUTHERN ENGINEER.

CHEESE-CLOTH MANUFACTURERS

should write, indicating their ability to handle orders on 22 x 18 cheese-cloth for a concern using large quantities. Address Box 29, care COTTON.

WANTED
Children's Hosiery.

An inquiry has been received for 1,000 cases of children's ribbed hose in sizes 5 to 10, at a price of 85 cents to 87½ cents a dozen. Any mill in a position to consider a proposition of this character should communicate with Box 28, care COTTON.

Used Machines For Sale
F. O. B. Atlanta

One 20" x 12' Lathe.
One 32" x 12' Lathe.
Two 16" x 10' Lathe.
One 16" x 8' Lathe.
One 24" Aurora Drill Press with tapping attachment.
One new 1½" Single Head Landis Bolt Cutter.
New Marvel Power Hack Saws in stock for immediate delivery.
We can equip you in either new or used machinery. Write us.

Seeger-Walraven Company
Machinery and Mill Supplies.
38 W. Alabama St., Atlanta, Ga.

New and Second Hand

ENGINES

Corliss Automatic and Slide Valve

BOILERS

Pumps, Hoisting Engines, Gas and Gasoline Engines.

MACHINE TOOLS

Lathes, Planers, Shapers, Drill Presses, etc.

WOOD WORKING

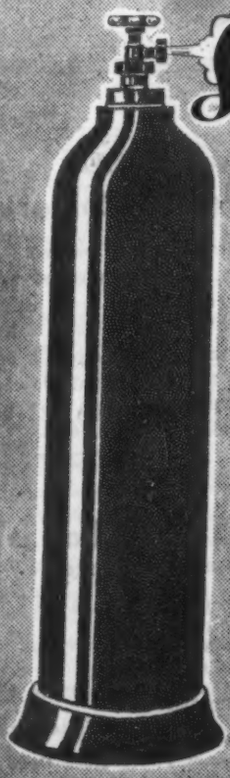
Planers, Molders, Band Saws, etc.

ELEC. MACHINERY

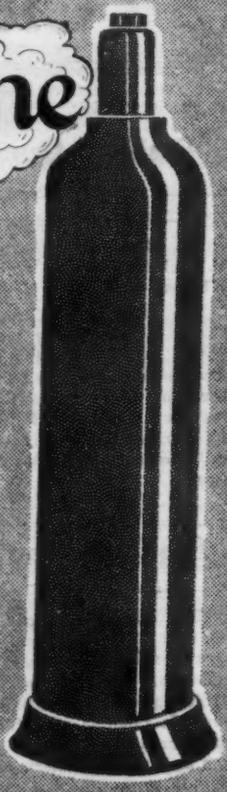
Dynamos and Motors

AND SUPPLIES OF ALL KINDS

FRANK TOOMEY, Inc.,
127-31 N. Third St.
Philadelphia, - Pennsylvania



Liquid Chlorine



1 Pound of Liquid Chlorine=6 Pounds of Bleaching Powder

That is why Liquid Chlorine is the 100% bleaching agent. Not only do the best bleaching powders contain only 36% available chlorine, but think of the waste in both powder and time, and also the freight charges you have to pay on the extra weight of drums and casks of bleaching powder. Every manufacturer is on the alert for an increase in efficiency. No workman can be efficient if exposed to the noxious effects of Bleach. In fact in many cases extra pay is required to secure men to mix it. Liquid Chlorine has no such disadvantages and when handled in the proper way does not even emit an odor.

It has been amply demonstrated in comparative trials under actual mill conditions and on a large scale, that where a bleach of high quality is desired with reference to clearness of color, freedom from deleterious substances, convenience and simplicity of operation, highest efficiency of bleaching agent, and possibility of scientific accuracy and control in the methods of bleaching, the use of Liquid Chlorine is a step far in advance of the crude methods where chloride of lime is employed.

Our representatives will gladly demonstrate Liquid Chlorine in your mill. Be sure to write today for our interesting booklet. It's free. Just drop a post card.

Electro Bleaching Gas Company

18 East 41st Street NEW YORK CITY

Hotel Marseilles

On Broadway at 103d St., New York

FINEST ROOMS IN TOWN

owing to delightful location between Central Park and Hudson River. In the midst of beautiful west side residences, removed from noise and dust, yet within a few minutes of the business, shopping and amusement centres.

YOU'LL ENJOY EVERY MOMENT AT THE MARSEILLES.

LOW RATES.

Room and bath from $2.00 per day.

2 Rooms and bath from $3.50 per day.

Superb Dining Room a la carte.

Club Breakfast from 35c up.

Write for booklet and map.

M. E. Burke, Mgr.

Subway Express Station on Corner.

Concerning You

and the advertisements in this journal

ADVERTISING is the connecting link between the mill man and an ever advancing standard of efficiency. The advertising of an improved product has stimulated other manufacturers toward still more improved articles. The result is progress in the textile field.

The advertisements in COTTON bring equal opportunity to every mill man. The mill man in a remote district can look over the advertising pages and thereby be in nearly as close touch with textile plant modernity as his brother in the larger cities.

The mill man who reads the advertisements and keeps in touch with the best products for his plant is worth more to himself and to his plant.

So read the advertisements. It's a habit that will *"get you there."*

Starch

Textile Starches

In the manufacture of cotton goods a greal deal depends on the proper use of starch. It is impossible to have good weaving and high production unless the warps are properly sized.

We have made a scientific study of the use of starch both by laboratory research and practical tests in the mills. As the result of this work we have determined what kind of starch produces the best results on the different classes of goods and we are now able to offer to the trade SPECIAL TEXTILE STARCHES adapted to every requirement of manufacture.

We are prepared to study your problems and show you how to obtain the best results on the particular class of goods you are making.

For Information Address

Corn Products Refining Co.
New York
Southern Office
Greenville, S. C.

Starch

Make Your Bleach Out of Salt Water

WE manufacture a number of different types of cells for this purpose. All you require besides this is direct current of electricity and salt water.

Write for additional information.

Electro Chemical Company,

Formerly

National Laundry Machinery Co.

Dayton, Ohio, U.S.A.

VICTOR MILL STARCH

The Weaver's Friend

It boils thin—penetrates the warps—increases breaking strength and carries the weight into the cloth. Being thoroughly washed free of gluten and other foreign matter it gives a bleach and finish to the goods that you can get from no other starch.

A trial order will convince you that VICTOR STARCH has no equal on the market.

THE KEEVER STARCH COMPANY, Columbus, Ohio

Southern Agent: MR. JAS. H. MAXWELL, Greenville, S. C.

If you are not already using VICTOR STARCH call on our representative for a demonstration at your convenience.

MADE IN U. S. A.

HOLLAND ANILINE CO.

SALES OFFICES AND WORKS,

HOLLAND, MICH.

Export Trade Solicited.

Pede-se correspondencia com qualquer paiz.

Se solicita correspondencia con todos paizes.

SOLUBILITY

BRILLIANCY

METHYL VIOLET B

METHYLENE BLUE BB

BISMARK BROWN Y and R

BLUE B, BB, R, RR

SULPHOBISTRE EX. CONC.

CONCENTRATION

Caustic Soda
Soda Ash
Caustic Potash
Aniline Oil
Carbonate of Potash
Bichromates
Chlorates
Prussiates

Cocoanut Oil
Olive Oil
Olive Oil Foots
Palm Oil
Soya Bean Oil
Castor Oil
Cotton Seed Oil
Red Oil
Etc., Etc., Etc.

B. BROWN & BRO.

280 Broadway
NEW YORK, N. Y.

Philadelphia Branch:
DREXEL BUILDING Telephone, Lombard 2186

San Francisco:
340 SANSOME ST., Dough. 3332

BOSSON & LANE

Manufacturing Chemists

Specializing
in
BLEACHING
DYEING
SIZING
AND
FINISHING
TEXTILES

Works and Office
Atlantic, Massachusetts

Established 1870.

The Warren Soap Manufacturing Co.

77 Summer St., Boston, Mass.

Manufacturers of Textile Soaps *used* and *endorsed* by the leading Cotton, Woolen, Worsted and Silk Mills in the United States.

The Parsons-Barr Co.

Charlotte, N. C.
Southern Agents.

AMERICAN DYES FOR AMERICAN DYERS

KHAKI No. 1
(for Wool and Worsted)

KHAKI No. 2
(for Cotton)

LOGWOOD and HEMATINE
(Extracts and Crystals)

Write for quotations and samples

MARDEN, ORTH & HASTINGS CO., Inc.

Established 1837

BOSTON
CHICAGO

61 Broadway
NEW YORK

CLEVELAND
SAN FRANCISCO

National Aniline & Chemical Co.

100 WILLIAM ST., NEW YORK

AMERICAN ANILINE COLORS
TRADE MARK

MANUFACTURERS OF
Aniline Colors and Coal Tar Products
IMPORTERS OF
Dyestuffs, Chemicals, Gums, Etc.
OFFICES AND WAREHOUSES:

NEW YORK
BOSTON
HARTFORD
CINCINNATI
KANSAS CITY
PHILADELPHIA
PROVIDENCE
CHICAGO
MILWAUKEE
MINNEAPOLIS
CHARLOTTE, N. C.

WORKS:
SCHOELLKOPF ANILINE & CHEMICAL WORKS, Inc., Buffalo, N. Y.

ANILINE AND DYEWOOD
COLORS EXTRACTS
Walter F. Sykes & Co., IMPORTERS
Main Office:
85 Water St., New York
Branches:
113 Broad St., Boston 132 Chestnut St., Philadelphia
Paterson, N. J.

Aniline Dyes
Dyewood Extracts
AND ALL
Textile Chemicals
Baltic Chemical Co.
PHONE 4142 WORTH 4143 4144
183 Duane St.
New York
Works: YONKERS, N. Y.

SULPHANTINE
Prevents Tender
SULPHUR DYED GOODS
BY
Stopping the Action of Sulphide of Soda.
The cost of using Sulphantine is very low. Write for information.
KALI MFG. CO.
1406-08-10 N. Front St.,
Philadelphia
Manufacturers of Kali Hydroxy Soluble Oil

MILL SUPPLIES
Caustic Soda, Soda Ash,
Caustic Potash, Carbonate of Potash,
Chlorates, Bichromates,
Chloride of Lime, Cocoanut Oil,
Soya Bean Oil, Palm Oil,
Olive Oil Foots.
Frederick H. Cone
176 Front Street NEW YORK

For Hosiery Dyeing:
ZETA BLACK
Fast and Non-Bronzing
A Test Will Convince
A. KLIPSTEIN & COMPANY
644-652 Greenwich Street
New York City

JACQUES WOLF & CO., Passaic, N. J.
Sizings and Finishing Products for Cotton, Wool and Silk. All Sulphonated Castor Oils.
MONOPOLE OIL. U. S. Patent No. 861397.
New York Office, 100 William Street.
Western Representative, United Indigo & Chemical Co., Ltd., 218 West Kinzie St., Chicago, Ill.

Only Reliable Products Can
Be Continuously Advertised

GUMMED TAPE AND MOISTENING MACHINES
ESPECIALLY PREPARED FOR
SLASHER MACHINES
WRITE US FOR PRICES AND SAMPLES.
ACME GUMMED PRODUCTS CO., 10-14 Tift Street, ATLANTA, GA.

WATER SOFTENING OR FILTRATION
FOR BOILER FEED AND ALL INDUSTRIAL USES
WM. B. SCAIFE & SONS CO. PITTSBURGH, PA.

TELEPHONE
RECTOR 8840, 6662

CABLE ADDRESS
MADEROBRO

Madero Bros.

Incorporated

Chemical Dept.

115 Broadway, New York

QUEBRACHO EXTRACT
LOGWOOD EXTRACT
SOLID LOGWOOD

FUSTIC EXTRACT
HEMATINE CRYSTALS
ANILINE DYES

SODA ASH
CAUSTIC SODA
BLUE VITRIOL
CHLORIDE OF LIME
SULPHURIC ACID

NITRIC ACID
MURIATIC ACID
AMMONIA
CHLORATE OF POTASH
MURIATE OF POTASH
ALL OTHER CHEMICALS

BICHROMATE OF SODA
BICHROMATE OF POTASH
CITRIC ACID
TARTARIC ACID
TANNIC ACID

THE BAYER COMPANY, INC.

117 Hudson Street, NEW YORK
Manufacturers and Importers of

Aniline, Alizarine and Algol Colors

SPECIALTIES—For Cotton Khaki (Government Work) ALGOL Colors, also Direct and Sulphur Colors.

Importers of the Products Manufactured by

FARBENFABRIKEN VORMALS FRIEDR. BAYER & CO
Leverkusen, near Cologne on Rhine, Germany.

Indigo Extract
Natural Indigo

For Cotton and Wool Dyeing.

DYESTUFFS and CHEMICALS

Write for samples and prices

James C. Gismond & Co., Inc.

97 Water St., New York.

DELAHUNTY DYEING MACHINE COMPANY

ESTABLISHED 1880

Manufacturers of Textile and Mining Machinery

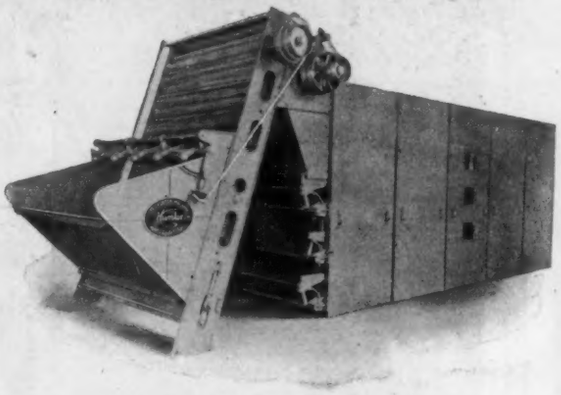
Revolving Cylinder Raw Stock Dyeing and Bleaching Machines
Revolving Cylinder Hosiery Dyeing and Bleaching Machines
Hosiery, Oxidizing, and Tom Tom Machines.
Circulating Type Raw Stock Dyeing and Bleaching Machines
Circulating Type Beam Dyeing Machines for Dyeing
Cotton Warp on Beams, 1 to 12 Beams in One Operation

Special Machines for Aniline, Sulphur, Indigo, and Other Vat Colors

OFFICE AND WORKS, PITTSTON, PA., U. S. A.

The Hunter

Agitating Table Dryer



The Fireproof Dryer
For Dyed and Bleached Cotton

A guarantee of absolute satisfaction goes with every dryer we make.

If you want a machine that will not only dry your material right, but will stand up under hard, continuous use, let your next dryer be a "Hunter."

It is a smooth, self cleaning perforated sheet steel drying table especially adapted for drying dyed and bleached cotton. Wire aprons are eliminated. In short, it is the best table dryer on the market. Write today for catalog.

JAMES HUNTER MACHINE CO. Hunter NORTH ADAMS MASS.

BEAM DYEING

That beam dyeing is the most efficient and most economical method for weaving mills is proven in the fact that nearly all dyeing machine improvements are in that direction.

The Morton Beam Dyeing Machine was first and has the largest number of satisfied users.

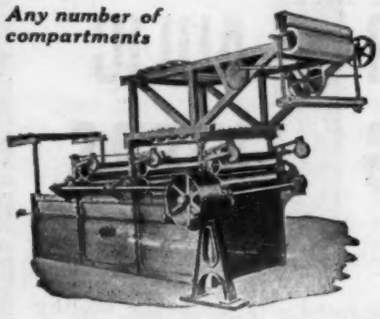
Recent improvements of The Morton Beam Dyeing Machine have perfected the beam dyeing process.

Complete information about beam dyeing and The Morton Beam Dyeing Machine will be furnished on request.

Columbus Truck & Supply Mfg. Co.
Columbus, Ga.

Dye Sulphur, Vat Colors, Catch or Fustic in this

Any number of compartments



"HUSTLER"
Dyeing Machine

Long or **Short Chain**, any number of warps. **Piece Goods**, any width.

Bleach in continuous process, **Boil-Out**, or Boil-out and Dye.

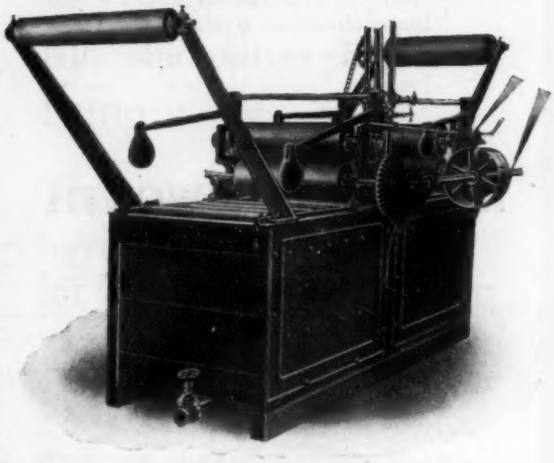
Cypress tanks of size to suit. Rolls rubber covered, iron, or brass.

Mention Cotton and get Bulletin 995A.

SALEM IRON WORKS
Winston-Salem, N. C.

COCKER

Two Compartment
WARP DYEING MACHINE



OUR Warp Dyeing Machines are made with any number of compartments, with boxes of all iron construction or combination iron frame cyprus lined boxes. Immersion rollers easily raised or removed.

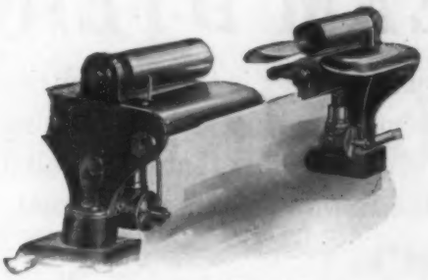
We also manufacture Warping Machinery, Beaming Machinery, and Dye-House Machinery of all kinds.

Write today for full information and prices.

Cocker Machine & Foundry Co.
Builders of Textile Machinery
GASTONIA, N. C.

Buying from advertisers in COTTON is safe buying

BUTTERWORTH



IF you are paying labor to feed finishing machinery, ask us to explain the "Foxwell" Pneumatic Guider and Feeder.

It automatically keeps goods straight and even in the machine; and not only cuts costs, but saves space and "seconds" and speeds up production.

Installations on trial. Catalog tells the story; write for it.

H. W. BUTTERWORTH & SONS CO.

Established 1820

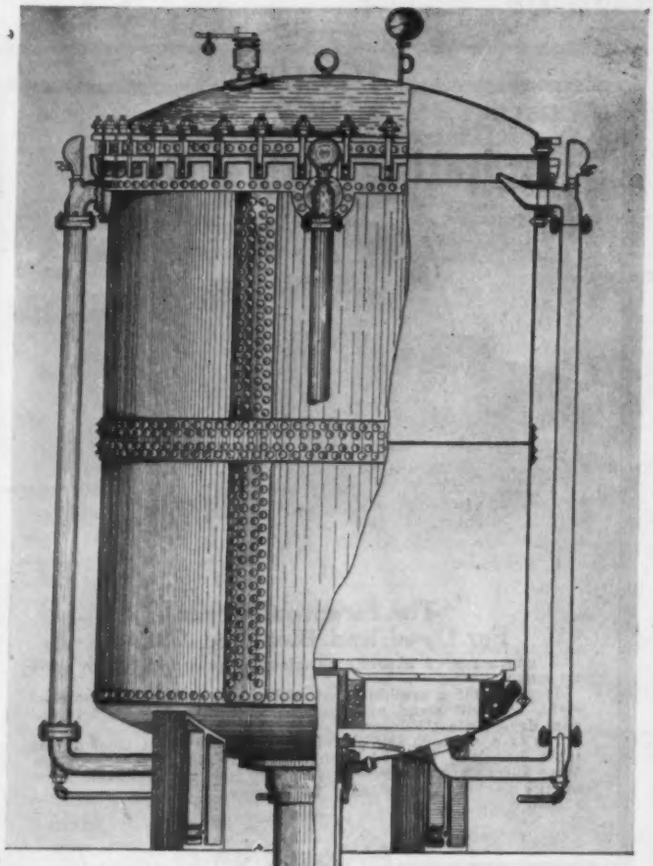
PHILADELPHIA

PROVIDENCE OFFICE
Turk's Head Building

FINISHING
Butterworth
MACHINERY

35

FINISHING MACHINERY



"ALLEN" PATENT HYDRAULIC BOILING KIERS

THIS is the last word in a hydraulic boiling kier for raw stock, and especially for absorbent cotton.

It is mechanically correct in every detail. No live steam is admitted to the kier. Absolutely uniform results are secured with a minimum consumption of steam.

We would like to show you how an "Allen" Patent Kier will improve your present system. May we? Ask today for full information.

We also make the "Allen" Injector Kier and the "Allen Worcester" Kier which has electric driven circulator and indirect heater.

Worcester Steam Boiler Works
Wm. Allen Sons Co., Prop.
Worcester, Massachusetts.

Logwood Extracts for Extracting the Coloring Matter from Logwood Chips.

The Reliable Extractor

Efficient, uninterrupted service continuing for years, is yours in an American Extractor.

Every need the machine must meet was carefully studied—and all the skill of a large and exceptionally competent, scientific and engineering organization applied to make the American Extractor meet the conditions.

It may be had in various sizes. Balance is perfect—there is never any undue strain on the motor in starting or running.

American Extractors in use are operated by unanimoustly *satisfied* owners. Their names may be had on request.

The American Laundry Machinery Company

Specialty Dept. CINCINNATI

H. G. Mayer, Southern Textile Agent,
Realty Building, Charlotte, N. C.

"Proctor" Automatic Yarn Dryer

"P" stands for "Proctor" and also for Perfection.

"In the drying business," a manufacturer remarked, "they mean the same thing."

They ought to. We have been making dryers for 35 years.

Illustrated Catalog on request.

The Philadelphia Textile Machinery Company

Philadelphia

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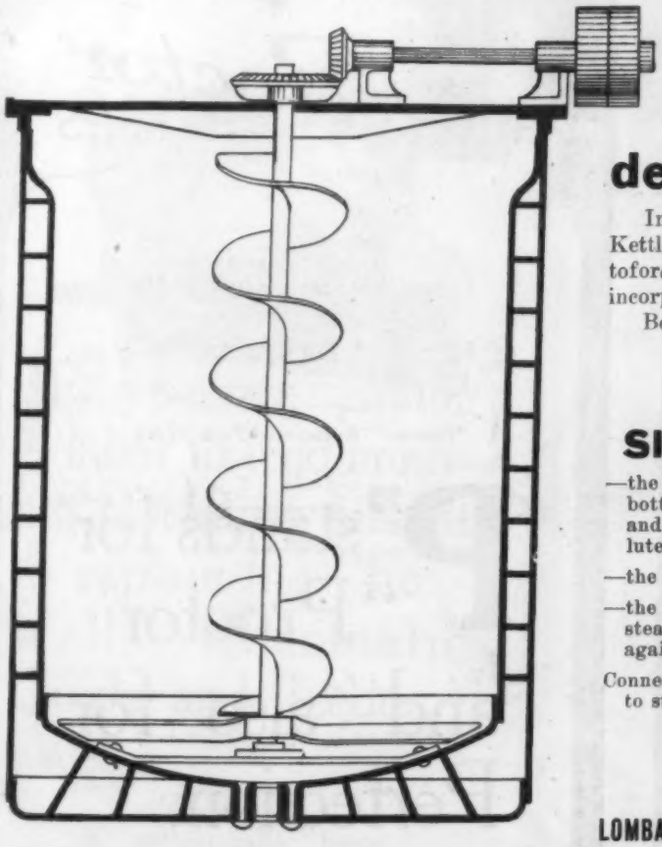


Keep Your Size Absolutely Uniform for Indefinitely Long Periods.

In designing this new Lombard Steam Jacketed Size-Kettle, we have eliminated the objectionable features heretofore encountered with kettles of this character, and have incorporated new features not found in any other.

Below are given a few of the many advantages of the

"LOMBARD"
STEAM JACKETED
SIZE "STORAGE" KETTLES

—the spiral conveyor and the knife paddle located at the bottom of the kettle keeps the size in constant circulation, and a uniform temperature and thickness is assured absolutely.

—the knife paddle at the bottom prevents caking.

—the steam is never wasted, as after passing through the steam jacket it is returned to the heater to be used over again. All condensation is eliminated.

Connect to a circulating system and the slashers are ready to start at bell time every morning.

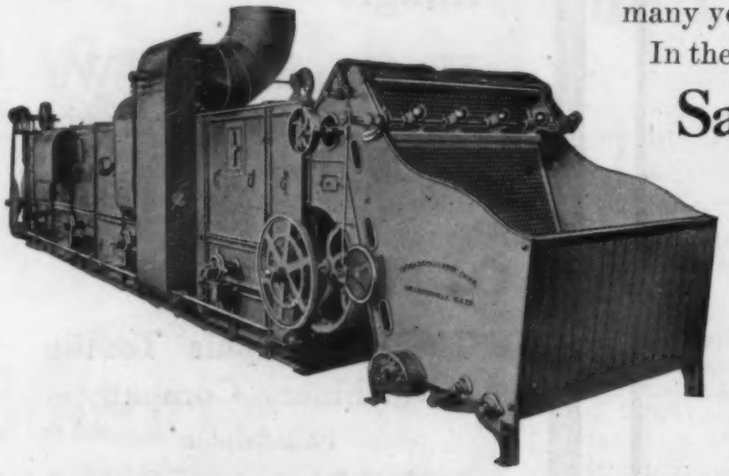
For economy in size, time and steam, use the Lombard Size Kettle.

Write today for full information.

LOMBARD IRON WORKS & SUPPLY COMPANY, AUGUSTA, GA.

SARGENT DRYERS mark progress in Dryer Development comparable to that made in other fields of mechanical endeavor.

They are favored with a natural preference because they are designed on basic principles of air circulation, conveying, and general drying apparatus construction, which have had the approval of discriminating mill men and drying engineers for many years.



In the

Sargent Dryer

these principles have been combined and refined, making a complete machine which is unexcelled.

For drying cotton, linters, wool, hair, flax and other classes of raw material.

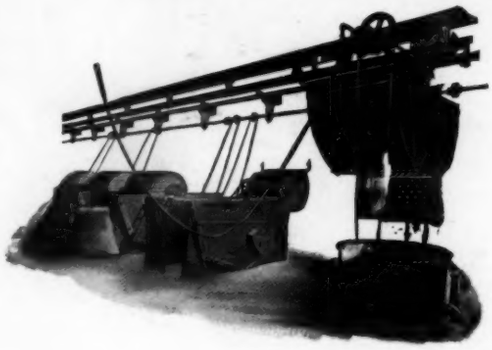
C. G. SARGENT SONS Corp., GRANITEVILLE, MASS.

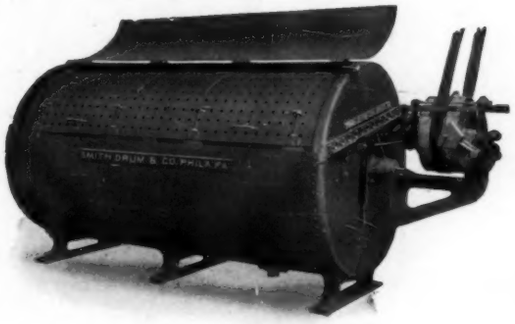
FRED H. WHITE, Southern Agent, Charlotte, N. C.

Sulphur Black Dyeing Machines

Capacities from 50 to 500 lbs. per batch.

CIRCULATING AND ROTARY TYPES





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BUILDERS OF "THE BEST" LABOR SAVING DEVICES

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PHILADELPHIA, PA.

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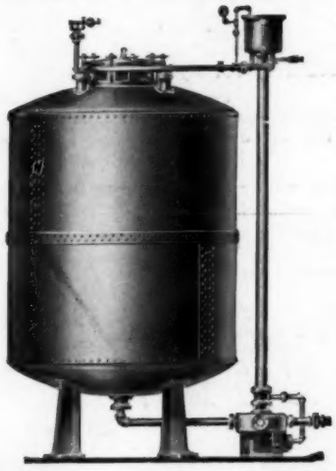
Singeing, Bleaching, Mercerizing, Dyeing, Drying, Printing and Finishing

Textile Fabrics and Warps



Pressure and Open Boil

KIERS

for

Woven and Knit Goods, Yarns
Raw stock and Linters.

The Textile-Finishing Machinery Co.,

PROVIDENCE, R. I., U. S. A.
New York Office, 30 Church St.

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MANUFACTURERS OF

SULPHUR BLACK

(Powder of uniform strength—no paste)

WE ARE ACTUAL MANUFACTURERS OF

METHYL VIOLET
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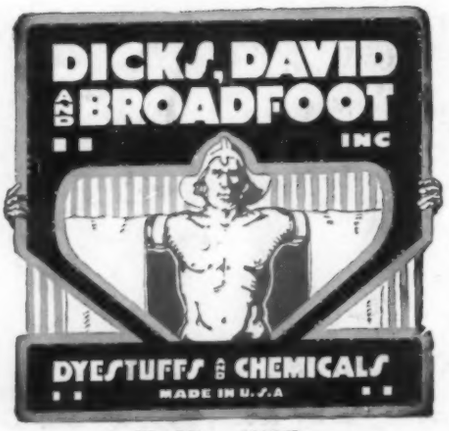

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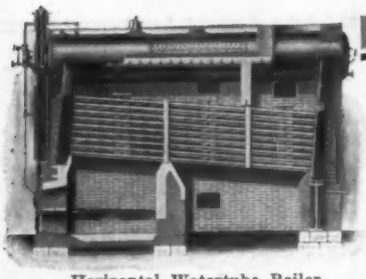

Horizontal Watertube Boiler.

THE HTC BOILERS

STANDARD FOR THIRTY YEARS

THE CASEY-HEDGES CO.

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Makers of

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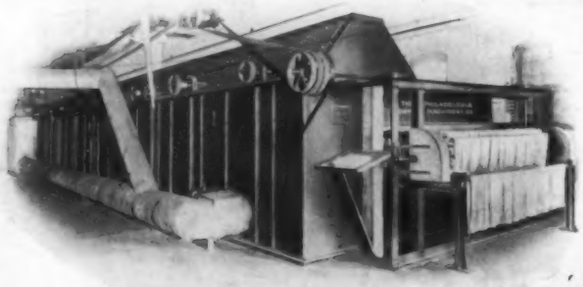
Machinery for dyeing yarns wound on parallel tubes.

Installations in Riverside and Dan River, Gibson Mfg. Co., Patterson Mills and others.

"HURRICANE" DYEING, DRYING AND FINISHING MACHINERY, PRESSES, ETC.



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Automatic Drying and Conditioning Machine for All Kinds of Yarn

Yarns handled by this method retain their color, strength and softness, and are thoroughly dried and uniformly conditioned. The skeins are automatically carried through drying and conditioning atmospheres and delivered cool and containing the normal amount of moisture. These machines are now being used by many of the largest mills.

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